BEFORE THE

PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA

DOCKET NO. 2018-82 -S

IN RE:	)	
	)	
Application of Palmetto Wastewater	)	
Reclamation LLC for Adjustment of	)	**VERIFICATION OF TESTIMONY**
Rates and Charges for, and the Modification	)	
of Certain Terms and Conditions Related to,	)	
the Provision of Sewer service.	)	
	)	

Personally appeared before me, Harold Walker, III, who, being duly sworn, deposes and states as follows:

1. I am over eighteen years of age and competent to testify to matters stated in my attached pre-filed direct testimony and exhibits submitted on behalf of Palmetto Wastewater Reclamation LLC.

2. I hereby verify that the statements made in the pre-filed Direct Testimony of Harold Walker, III, are true and correct to the best of my knowledge and belief.

FURTHER AFFIANT SAYETH NOT.

Harold Walker, III

Sworn to and subscribed before me
this 3rd day of April, 2019.

Maureen Rogers
Notary Public for Montgomery County, PA
My Commission Expires: Aug 23, 2020

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Maureen Rogers, Notary Public
Lower Providence Twp., Montgomery County
My Commission Expires Aug. 23, 2020
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

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sewer service.	)
_____	)

PREFILED DIRECT TESTIMONY OF HAROLD WALKER ON BEHALF OF PALMETTO WASTEWATER RECLAMATION LLC

Prepared by:

GANNETT FLEMING

VALUATION AND RATE CONSULTANTS, LLC

Valley Forge, Pennsylvania

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TERMS, ABBREVIATIONS AND ACRONYMS

Terms, Abbreviations and Acronyms	Defined
CAPM	Capital Asset Pricing Model
Commission	Public Service Commission of South Carolina
Company	Palmetto Wastewater Reclamation LLC
Comparable Companies	Water Group Followed by Analysts
Comparable Group	Water Group Followed by Analysts
Cost of Capital	Investor-required cost rate
DCF	Discounted Cash Flow
DPS	Dividend per share
EPA	U.S. Environmental Protection Agency's
EPS	Earnings per share
Financial Risk	Leverage
GICS	Global Industry Classification System
GO	General Obligation Bonds
IOU	Investor Owned Utilities
Leverage	Fixed cost capital
Long-term U.S. Treasury Securities	Base Risk-Free Rate
M/B	Market-to-Book Ratios
Moody’s	Moody's Investors Service
NARUC	National Association of Regulatory Utility Commissioners
Non-Systematic Risk	Company-Specific Risk
PSC	Public Service Commission of South Carolina
PWR	Palmetto Wastewater Reclamation LLC
ROE	Return on Equity
RP	Risk Premium
S&P	Standard & Poor's
SIC	Standard Industrial Classification
Systematic Risk	Non-Diversifiable Risk
Value Line	Value Line Investment Survey
Water Group	Water Group Followed by Analysts

INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Harold Walker, III. My business mailing address is P. O. Box 80794, Valley Forge, Pennsylvania 19484.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Gannett Fleming Valuation and Rate Consultants, LLC as Manager, Financial Studies.

Q. WHAT IS YOUR EDUCATIONAL BACKGROUND AND EMPLOYMENT EXPERIENCE?

A. My educational background, business experience and qualifications are provided in Appendix A.

SCOPE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to recommend an appropriate overall rate of return that Palmetto Wastewater Reclamation LLC ("PWR" or the "Company") should be afforded an opportunity to earn on its wastewater service rate base. My testimony is supported by Exhibit HW-1, which is composed of 19 Schedules.

SUMMARY OF RECOMMENDATION

Q. WHAT IS YOUR RECOMMENDED COST OF EQUITY?

A. My recommendation is that PWR be permitted an overall rate of return of 8.45%, including a 10.75% cost of common equity, based upon the Company's capital structure at August 31, 2018. My recommended cost of common equity reflects PWR's unique risk characteristics.

Q. HOW DID YOU DETERMINE YOUR RECOMMENDED COMMON EQUITY COST RATE?

A. I used several models to help me in formulating my recommended common equity cost rate including Discounted Cash Flow ("DCF"), Capital Asset Pricing Model ("CAPM") and Risk Premium ("RP").

Q. IS IT IMPORTANT TO USE MORE THAN ONE MARKET MODEL?

A. Yes. It is necessary to estimate common equity cost rates using a number of different models. At any given time, a particular model may understate or overstate the cost of equity. While any single investor may rely solely upon one model, different investors rely on different models and many investors use multiple models. Therefore, because the price of common stock reflects a number of valuation models, it is appropriate to estimate the market-required common equity cost rate by applying a broad range of analytical models.

Q. PLEASE SUMMARIZE YOUR COMMON EQUITY COST RATE RECOMMENDATION.

A. There is no market data concerning PWR's shares of common stock because PWR shares of common stock are not publicly traded. Accordingly, due to the lack of market data concerning the PWR's equity, I used a comparable group of publicly traded companies to estimate the common equity cost rate. Based upon the results of my entire analysis, I conclude PWR's current common equity cost rate is at least 10.75%. The current range of common equity cost for PWR is 10.50% (DCF), 10.80% (CAPM), and 11.10% (RP). Value Line Investment Survey ("Value Line") is relied upon by many investors and is the only investment advisory service of which I am aware that projects earned return on equity. As a check on the reasonableness of my common equity cost rate recommendation, I reviewed Value Line's projected returns on common equity for comparable utilities. Value Line's projected earned returns on common equity for my comparable utilities range from 10.5% to 14.0%. The range of the projected returns suggests that my recommendation that PWR be permitted an opportunity to earn 10.75% is reasonable, if not conservative.

PRINCIPLES OF RATE REGULATION AND FAIR RATE OF RETURN

Q. WHAT ARE THE PRINCIPLES GUIDING FAIR RATES OF RETURN IN THE CONTEXT OF RATE REGULATION?

A. In a capitalistic or free market system, competition determines the price for all goods and services. Utilities are permitted to operate as monopolies or near monopolies as a tradeoff for a ceiling on the price of service because: (1) the services provided by

utilities are considered necessities by society; and (2) capital-intensive and long-lived facilities are necessary to provide utility service. Generally, utilities are required to serve all customers in their service territory at reasonable rates determined by regulators. As a result, regulators act as a substitute for a competitive-free market system when they authorize prices for utility service.

Although utilities operate in varying degrees as regulated monopolies, they must compete with governmental bodies, non-regulated industries, and other utilities for labor, materials, and capital. Capital is provided by investors who seek the highest return commensurate with the perceived level of risk; the greater the perceived risk, the higher the required return rate. In order for utilities to attract the capital required to provide service, a fair rate of return should equal an investor-required, market-determined rate of return.

Q. WHAT CONSTITUTES A FAIR RATE OF RETURN?

A. Two noted Supreme Court cases define the benchmarks of a fair rate of return. In *Bluefield*[1], a fair rate of return is defined as: (1) equal to the return on investments in other business undertakings with the same level of risks (the comparable earnings standard); (2) sufficient to assure confidence in the financial soundness of a utility (the financial integrity standard); (3) adequate to permit a public utility to maintain and support its credit, enabling the utility to raise or attract additional capital necessary to provide reliable service (the capital attraction standard). The second case, *Hope*[2], determined a fair rate of return

[1] *Bluefield Water Works & Improvement Company v. P.S.C. of West Virginia*, 262 U.S. 679 (1923).

[2] *Federal Power Commission v. Hope Natural Gas Company*, 320 U.S. 591 (1944).

to be based upon guidelines found in *Bluefield* as well as stating that: (1) allowed revenues must cover capital costs including service on debt and dividends on stock; and (2) the Commission was not bound to use any single formula or combination of formulae in determining rates. Utilities are not entitled to a guaranteed return. However, the regulatory-determined price for service must allow the utility a fair opportunity to recover all costs associated with providing the service, including a fair rate of return.

INVESTMENT RISK

Q. PREVIOUSLY, YOU REFERRED TO RISK. PLEASE DEFINE THE TERM RISK.

A. Risk is the uncertainty associated with a particular action; the greater the uncertainty of a particular outcome, the greater the risk. Investors who invest in risky assets expose themselves to investment risk particular to that investment. Investment risk is the sum of business risk and financial risk. Business risk is the risk inherent in the operations of a business. Assuming that a Company is financed with 100% common equity, business risk includes all operating factors that affect the probability of receiving expected future income such as: sales volatility, management actions, availability of product substitutes, technological obsolescence, regulation, raw materials, labor, size and growth of the market served, diversity of the customer base, economic activity of the area served, and other similar factors.

Q. WHAT IS FINANCIAL RISK?

A. Financial risk reflects the manner in which an enterprise is financed. Financial risk arises from the use of fixed cost capital (leverage) such as debt and/or preferred stock,

because of the contractual obligations associated with the use of such capital. Because the fixed contractual obligations must be serviced before earnings are available for common stockholders, the introduction of leverage increases the potential volatility of the earnings available for common shareholders and therefore increases common shareholder risks.

Although financial risk and business risk are separate and distinct, they are interrelated. In order for a company to maintain a given level of investment risk, business risk and financial risk should complement one another to the extent possible. For example, two firms may have similar investment risks while having different levels of business risk, if the business risk differences are compensated for by using more or less leverage (financial risk) thereby resulting in similar investment risk.

DESCRIPTION OF PWR

Q. PLEASE GIVE A BRIEF DESCRIPTION OF THE COMPANY.

A. Palmetto Wastewater Reclamation LLC is a Delaware limited partnership authorized to conduct business in the State of South Carolina and which provides sewer service in areas of Richland and Lexington counties of South Carolina. Palmetto Wastewater Reclamation LLC does business as business as Palmetto Wastewater Reclamation - Alpine Utilities and Palmetto Wastewater Reclamation - Woodland Utilities. Ni South Carolina Utilities LLC is the direct parent of Palmetto Wastewater Reclamation LLC and Ni South Carolina Utilities LLC is owned by Ni Pacolet Milliken Utilities, LLC. PWR provides wastewater services to approximately 1,700 customers who are located in their franchise territory in Richland and Lexington counties of South Carolina. The price

of service of PWR is regulated by the Public Service Commission of South Carolina ("Commission" or "PSC").

THE INDUSTRY

Q. PLEASE GIVE A BRIEF OVERVIEW OF THE INDUSTRY IN WHICH THE COMPANY OPERATES.

A. PWR operates in the wastewater supply industry. The wastewater utility industry has a Standard Industrial Classification ("SIC") code of 4952 (Sewerage Systems), has sewer utilities, and includes establishments primarily engaged in the collection and disposal of wastes conducted through a sewer system, including such treatment processes as may be provided. There are currently 1,861 U.S. Businesses with an SIC code of 4952. A comparative industry to the wastewater supply industry is the water supply industry. The water supply industry has an SIC code of 4941, has water utilities, and includes establishments primarily engaged in distributing water for sale for residential, commercial, and industrial uses. Government controlled establishments such as municipalities, public service districts and other local governmental entities dominate the industry. Private companies or investor owned utilities ("IOU") are active in the construction and improvement of water supply facilities and infrastructure. There are currently 9,538 U.S. Businesses with an SIC code of 4941.

The water supply industry is the most fragmented of the major utility industries with more than 53,000 community water systems in the U.S. (83% of which serve less than 3,300 customers). The nation's water systems range in size from large municipally owned

systems, such as the New York City water system that serves approximately 9 million people, to small systems, where a few customers share a common well.

According to the U.S. Environmental Protection Agency's ("EPA") most recent survey of publicly-owned wastewater treatment facilities in 2008, there are approximately 15,000 such facilities in the nation, serving approximately 74% of the U.S. population. Eighty percent of domestic wastewater systems are government owned rather than IOUs. Currently, there are no wastewater utility companies that have actively traded stock.[3]

An estimated 14% of all water supplies are managed or owned by IOUs. IOUs consist of companies with common stock that is either actively traded or inactively traded, as well as companies that are closely held, or not publicly traded. Currently, there are only about 10 investor owned water utility companies with publicly traded stock in the U.S.

The wastewater utility industry's and water utility industry's increased compliance with state and federal water purity levels and large infrastructure replacements are driving consolidation of the wastewater utility and water utility industries. Because many wastewater utility and water utility operations do not have the means to finance the significant capital expenditures needed to comply with these requirements, many have been selling their operations to larger, financially stronger operations.

The larger IOUs have been following an aggressive acquisition program to expand their operations by acquiring smaller wastewater and water systems. Generally, they enter a new market by acquiring one or several wastewater or water utilities. After their initial entry into a new market, the larger investor-owned water utility companies continually seek

[3] Many of the publicly traded water utility stocks also own some wastewater utilities but there are no publicly traded utility stocks which are comprised solely of wastewater utilities.

to expand their market share and services through the acquisition of wastewater and water utility businesses and operations that can be integrated with their existing operations. Such acquisitions may allow a company to expand market share and increase asset utilization by eliminating duplicate management, administrative, and operational functions. Acquisitions of small, independent utilities can often add earning assets without necessarily incurring the costs associated with the SDWA if such acquisitions are contiguous to the potential purchaser.

In summary, the result of increased capital spending, to meet the SDWA requirements[4] and replace the aging infrastructure of many systems, has moved the wastewater and water industries toward consolidation. Moreover, Federal and State regulations and controls concerning water quality are still in the process of being developed and it is not possible to predict the scope or the enforceability of regulations or standards which may be established in the future, or the cost and effect of existing and potential regulations and legislation upon PWR. However, as a smaller wastewater system, PWR faces the cost of compliance with less financial resources when compared to larger IOU water utilities.

[4] The SDWA, or Safe Drinking Water Act, is the principal federal law in the United States intended to ensure safe drinking water for the public. Pursuant to the act, the EPA is required to set standards for drinking water quality and oversee all states, localities, and water suppliers who implement these standards. The CWA, or Clean Water Act, is the primary federal law in the United States governing water pollution. The CWA's objective is to restore and maintain the chemical, physical, and biological integrity of the nation's waters by preventing point and nonpoint pollution sources, providing assistance to publicly owned treatment works for the improvement of wastewater treatment, and maintaining the integrity of wetlands.

<u>COMPARABLE GROUP</u>

Q. HOW DO YOU ESTIMATE THE COST OF COMMON EQUITY FOR PWR?

A. PWR is a private limited liability company without publicly traded common stock. Accordingly, I employed a comparable group of utility companies with actively traded stock, to determine a market-required cost rate of common equity capital for PWR. Since no companies are perfectly identical to PWR, it is reasonable to determine the market-required cost rate for a comparable group of utility companies and adjust, to the extent necessary, for investment risk differences between PWR and the comparable group.

Q. HOW DID YOU SELECT THE COMPARABLE GROUP USED TO DETERMINE THE COST OF COMMON EQUITY FOR PWR?

A. I selected a comparable group of water utilities to determine the cost of common equity for PWR considering security analysts' coverage. Unlike the other utility industries, only a portion of the IOU water companies with publicly traded stock in the U.S. are followed by security analysts. Coverage by security analysts is important when determining a market required cost of common equity. Accordingly, security analysts' coverage was considered when selecting my comparable group. I selected my water utility comparable group, Water Group Followed by Analysts ("Water Group"), based upon a general criteria that includes: (1) all U.S. water utilities who are covered by several security analysts as measured by the existence of several sources of published projected five-year growth rates in earnings per share ("EPS"); (2) with a Global Industry Classification

Standard[5] ("GICS") of 55104010 (*i.e.*, Water Utility); (3) are not the announced subject of an acquisition; (4) currently pay a common dividend and have not reduced their common dividend within the past four years; and (5) have market capitalization greater than $75.0 million.

It should be noted that the Water Group is also referred to as the Comparable Group and/or the Comparable Companies.[6] The names of the utilities that comprise the Comparable Group and their bond or credit ratings are listed in Table 1.

Table 1

Bond and Credit Ratings for
The Water Group Followed by Analysts

	S&P Credit Rating
Water Group Followed by Analysts	
American States Water Co	A+
American Water Works Co Inc	A
Aqua America Inc *	A+
California Water Service Gp **	A+
Middlesex Water Co	A
SJW Corp ***	A
York Water Co	A-
Average	A

* - The A+ bond rating is that for Aqua Pennsylvania, Inc.
** - The A+ bond rating is that for California Water Service Co., Inc.
*** - The A bond rating is that for San Jose Water Co.

[5] GICS is an eight-digit code that represents a company's Global Industry Classification Standard that was developed by Standard & Poor's and Morgan Stanley Capital International. The eight-digit code can be broken down according to a hierarchy of economic sectors, industry groups, industries and sub-industries: All Economic Sectors are represented by the leftmost two-digits; Industry Groups are represented by the combination of the leftmost four-digits; Industries are represented by the combination of the leftmost six-digits; and Sub-Industries are represented by the combination of the leftmost eight-digits.

[6] Six of the Comparable Companies also provide some wastewater service. SJW Corp. is the only company in the Water Group that does not also provide wastewater service.

Q. WHY DID YOU INCLUDE NOT BEING THE SUBJECT OF AN ACQUISITION AS A CRITERIA FOR THE WATER GROUP?

A. To begin with, there are only about 10 investor owned water utility companies with publicly traded stock in the U.S., and some of these companies are very small. As stated previously, the IOU water industry receives only limited exposure on Wall Street.

Additionally, the merger activity in the water industry can result in abnormal or "tainted" stock prices in terms of a DCF analysis because premiums are typically paid in corporate acquisitions. That is, when a tender offer is made for the purchase of all the outstanding stock of a company, the amount of that offer usually exceeds the price at which the stock was previously traded in the market. These large premiums are often reflected in the prices of other water utilities that are not currently the announced subject of an acquisition.[7]

CAPITAL STRUCTURE

Q. WHAT IS REQUIRED TO DEVELOP AN OVERALL RATE OF RETURN?

A. The first step in developing an overall rate of return is the selection of capital structure ratios to be employed. Next, the cost rate for each capital component is determined. The overall rate of return is the product of weighting each capital component by its respective capital cost rate. This procedure results in PWR's overall rate of return being weighted proportionately to the amount of capital and cost of capital of each type of capital.

[7] Multiple publications mention these impacts including Research Magazine – April, 2010, Barron's – March 2001, Utility Business – June 2002, and Value Line Investment Survey – April 2013.

Q. DOES PWR DIRECTLY RAISE OR ISSUE ITS OWN DEBT CAPITAL?

A. No, PWR's indirect parent, Ni Pacolet Milliken Utilities, LLC, raises the debt capital that is allocated to PWR.

Q. WHAT CAPITAL STRUCTURE RATIOS ARE APPROPRIATE TO BE USED TO DEVELOP PWR'S OVERALL RATE OF RETURN?

A. Consistent with settled rate setting principles, I believe it is necessary to evaluate PWR's current cost of capital based on their August 31, 2018 capital structure, which includes 40.3% debt and 59.7% common equity as reflected in Schedule 1. These ratios synchronize capitalization with rate base.

Q. HOW DOES YOUR RECOMMENDED CAPITAL STRUCTURE COMPARE WITH RATIOS EMPLOYED BY OTHER INVESTOR-OWNED COMPANIES?

A. The capital structure I recommend for PWR reflects a common equity ratio of 59.7% which falls within the range of the ratios employed by other investor-owned water companies as shown on pages 1 and 2 of Schedule 2. A comparison of my recommendation for PWR's capital structure ratios to those recently employed and forecasted to be employed by the Comparison Group is shown in Table 2.

Table 2

Comparison of Capital Structure Ratios

	PWR	Water Group	
	At 8/31/2018	At 9/30/2018	Projected 2022
Debt	40.3	45.8	44.8
Preferred Stock	0.0	0.1	0.1
Common Equity	59.7	54.1	55.1
	100.0	100.0	100.0

The PWR's rate making capital structure ratios are reasonable based upon the above information. Moreover, PWR's smaller size justifies the use of more equity capital than the Comparison Group in order to counterbalance some of the risk associated with its size. The size of a company is an indicator of risk and is discussed later in my testimony in more detail.

EMBEDDED COST RATE

Q. WHAT EMBEDDED COST RATES DO YOU RECOMMEND BE USED TO CALCULATE PWR'S OVERALL RATE OF RETURN?

A. Consistent with my recommended capitals structure ratios I recommend using PWR's embedded debt cost rate of 5.04% for PWR as reflected and developed in Schedule 1. The determination of an embedded cost rate is a relatively simple arithmetic exercise because a company has contracted for this capital for a specific period of time and at a specific cost, including issuance expenses and coupon rate.

FINANCIAL ANALYSIS

Q. HAVE YOU REVIEWED HISTORICAL FINANCIAL INFORMATION OF PWR AS PART OF YOUR ANALYSIS?

A. Yes. On page 1 of Schedule 3, I developed a five-year analysis, ending in 2017, detailing various financial ratios for PWR. On Schedule 4, I performed a similar five-year analysis for the Water Group. Schedule 5 reveals the results of operations for a large broad-based group of utilities known as the Standard & Poor's ("S&P") Utilities for the five years ending 2017. This information is useful in determining relative risk differences between different types of utilities.

Comparing PWR, the Comparable Group and the S&P Utilities' coverage of fixed charges and the various cash flow coverage proves that the Comparable Group has experienced a higher level of coverage than the S&P Utilities. Reviewing PWR's various cash flow coverage show PWR has had similar but higher level of coverage than the Comparable Group.

Q. WHAT DO YOU CONCLUDE FROM THE COMPARISON OF ALL THE INFORMATION SHOWN ON SCHEDULES 3 THROUGH 5?

A. Taken together, these comparisons show that PWR is exposed to risk that is similar in nature but greater in degree compared with the Comparable Groups. This is evident in particular when one considers the size and diversification of PWR, or lack thereof, as compared to the Comparable Companies. Prospectively, the magnitude of PWR's future

construction expenditures will place downward pressure on PWR's financial ratios as measured by interest coverage and cash generation.

Q. WHAT INFORMATION IS SHOWN ON SCHEDULE 6?

A. Schedule 6 lists the names, issuer credit ratings, common stock rankings, betas and market values of the companies contained in the Comparable Group and the S&P Utilities. As is evident from the information shown on Table 3, the Comparable Group and the S&P Utilities are similar to each other in risk.

Table 3

	S&P Issuer Credit Rating	S&P Common Stock Ranking	Value Line Beta	Recent Market Value (Mill $)	Market Quartile Name
Water Group	A	Above Average (A-)	0.71	2,197.669	Low-Cap
S&P Utilities	BBB+	Average (B+)	0.69	25,682.945	Large-Cap

The Water Group's average issuer credit ratings and common stock rankings are higher than the S&P Utilities. The average beta of the Comparable Group, 0.71, is similar to the average beta of the S&P Utilities, 0.69. Beta is a measure of volatility or market risk, the higher the beta, the higher the market risk. The market values provide an indication of the relative size of each group. As a generalization, the smaller the average sizes of a group, the greater the risk.

Page 2 of Schedule 7 shows that PWR has experienced the lowest return on equity ("ROE") when compared to the Comparable Companies. Further, the Comparable Companies' dividend payout ratio is higher than PWR's, as PWR does not pay dividends. S&P, the predominant bond rating agency, considers profit to be a fundamental determinant of credit protection. S&P states that a firm's profit level:

> Whether generated by the regulated or deregulated side of the business, profitability is critical for utilities because of the need to fund investment-generating capacity, maintain access to external debt and equity capital, and make acquisitions. Profit potential and stability is a critical determinant of credit protection. A company that generates higher operating margins and returns on capital also has a greater ability to fund growth internally, attract capital externally, and withstand business adversity. Earnings power ultimately attests to the value of the company's assets, as well. In fact, a company's profit performance offers a litmus test of its fundamental health and competitive position.
>
> Accordingly, the conclusions about profitability should confirm the assessment of business risk, including the degree of advantage provided by the regulatory environment.[8]

Q. WHAT INFORMATION IS SHOWN ON SCHEDULE 7?

A. Schedule 7 reveals the capital intensity and capital recovery for PWR, the Comparable Companies and the S&P Utilities. Based upon the 2017 capital intensity ratio of plant to revenues, PWR ($9.09) is more capital intensive as compared to the Water Group ($5.82) and more than the S&P Utilities ($4.17). From a purely financial point of view, based on current accounting practices, the rate of capital recovery or depreciation rate is an indication of risk because it represents cash flow and the return of an investment. PWR's average rate of capital recovery is lower than the Comparable Group's, suggesting more risk.

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[8] Standard & Poor's Ratings Services, *Criteria, Utilities: Key Credit Factors: Business And Financial Risks In The Investor-Owned Utilities Industry*, Nov. 26, 2008, pgs. 8-9.

The return on equity and depreciation expense provides the margin for coverage of construction expenditures. For a utility company, depreciation expense is the single largest generator of cash flow. From a financial analyst's point of view, cash flow is the life blood of a utility company. Without it, a utility cannot access capital markets, it cannot construct plant, and therefore, it cannot provide service to its customers.

RISK ANALYSIS

Q. PLEASE EXPLAIN THE INFORMATION SHOWN ON SCHEDULE 8.

A. Schedule 8 details the size difference between PWR and the Comparable Group. Company size is an indicator of business risk and is summarized in Table 4.

Table 4

Number of Times Larger Than the PWR	Water Group
Capitalization	107.2x
Revenues	252.1x
Number of Customers	467.4x

As shown in Table 4, PWR is much smaller than the Water Group. The size of a company affects risk. A smaller company requires the employment of proportionately less financial leverage (*i.e.*, debt and preferred capital) than a larger company to balance out investment risk. If investment risk is not balanced out, then a higher cost of capital is required.

Q. WHY IS SIZE SIGNIFICANT TO YOUR ANALYSIS?

A. The size of a company can be likened to ships on the ocean, since a large ship has a much better chance of weathering a storm than a small ship. The loss of a large customer will impact a small company much more than a large company because a large customer of a small company usually accounts for a larger percentage of the small company's sales.

Moreover, a larger company is likely to have a more diverse geographic operation than a smaller company, which enables it to sustain earnings fluctuations caused by abnormal weather in one portion of its service territory. A larger company operating in more than one regulatory jurisdiction enjoys "regulatory diversification" which makes it less susceptible to adverse regulatory developments or eminent domain claims in any single jurisdiction. Further, a larger company with a more diverse customer base is less susceptible to downturns associated with regional economic conditions than a small company. For example, on average, the average company in the Water Group provides water/sewer service in multiple states for about 795,000 customers. The average population of the communities served by the average company in the Water Group is about 3.2 million people. These wide-ranging operations provide the Water Group substantial geographic, economic, regulatory, weather and customer diversification. PWR provides regulated wastewater service to about 1,700 customers. The concentration of PWR's business in central South Carolina makes it very susceptible to any adverse development in local regulatory, economic, demographic, competitive and weather conditions.

Further, S&P, a major credit rating agency, recognizes the importance that diversification and size play in credit ratings. S&P believes some of the critical factors include: regional and cross-border market diversification (mitigates economic,

demographic, and political risk concentration); customer diversification; and regulatory regime diversification.[9]

The size of a company can be a barrier to fluid access to capital markets (*i.e.*, liquidity risk). Investors require compensation for the lack of marketability and liquidity of their investments. If no compensation is provided, then investors, or at least sophisticated investors, shy away.

Q. IS THE IMPACT OF SIZE COMMONLY RECOGNIZED?

A. Yes, the National Association of Regulatory Utility Commissioners ("NARUC"), as well as most good financial texts, recognizes that size affects relative business risk. Liquidity risk and the existence of the small firm effect relating to business risk of small firms are well-documented in financial literature.[10] Investors' expectations reflect the highly-publicized existence of the small firm effect. For example, many mutual funds classify their investment strategy as small capitalization in an attempt to profit from the existence of the small firm effect.

As previously discussed, S&P recognizes that size plays a role in credit ratings.

> Standard & Poor's has no minimum size criterion for any given rating level. However, size turns out to be significantly correlated to ratings. The reason: size often provides a measure of diversification, and/or affects competitive position. . . . Small companies are, almost by definition, more concentrated in terms of product, number of customers, or geography. In effect, they lack some elements of diversification that can benefit larger companies. To the extent that markets and regional economies change, a broader scope of business affords protection. This consideration is

[9] Standard & Poor's, Corporate Ratings Criteria, Utilities: Key Credit Factors: Business And Financial Risks In The Investor-Owned Utilities Industry, Nov. 26, 2008.

[10] Banz, Rolf, W. "The Relationship Between Return and Market Value of Common Stocks," Journal of Financial Economics, 9:3-18 1981. For subsequent studies see Fama and French, etc.

> balanced against the performance and prospects of a given business. . . . In addition, lack of financial flexibility is usually an important negative factor in the case of very small companies. Adverse developments that would simply be a setback for companies with greater resources could spell the end for companies with limited access to funds.[11]

As shown on Schedule 9, size plays a role in the composition of investors, and hence liquidity. In 2017, about 83% of the Water Group's shares traded while the larger companies comprising the S&P Utilities had a much higher trading volume of 156%. Insiders[12] hold more than seven times more, as a percent to total, of the Water Group's shares than the S&P Utilities. Currently, only about 61% of the Water Group shares are held by institutions[13] while the larger companies comprising the S&P Utilities had much higher institutional holdings of 78%. Due to small size and less interest by financial institutions, fewer security analysts follow the Comparable Group and none follow PWR.

The lack of trading activity may affect the cost of equity estimates for small entities such as PWR and the Water Group. When stock prices do not change because of inactive trading activity, estimates of dividend yield for use in a dividend cash flow model and beta estimates for use in the capital asset pricing model are affected. In a stock market that is generally up, the beta estimates for the Comparable Companies may be understated due to thin trading.

[11] *Standard & Poor's,* Corporate Ratings Criteria 2006; pg. 22.

[12] An insider is a director or an officer who has a policy-making role or a person who is directly or indirectly the beneficial owner of more than 10% of a certain company's stock.

[13] Institutional holders are those investment managers having a fair market value of equity assets under management of $100 million or more. Certain banks, insurance companies, investment advisers, investment companies, foundations and pension funds are included in this category.

Q. DO PWR AND THE COMPARABLE COMPANIES HAVE SIMILAR OPERATING RISKS?

A. Yes. From an operations standpoint, PWR and the Comparable Companies have similar risks and are indistinguishable. Both are required to meet Clean Water Acts and Safe Drinking Water Act requirements and are also required to provide safe and reliable services to their customers and comply with Commission regulations.

Q. IS THERE ANY SINGLE MEASURE THAT BEST SHOWS INVESTMENT RISK FROM A COMMON STOCKHOLDER'S PERSPECTIVE?

A. No. However, from a creditor's viewpoint, the best measure of investment risk is debt rating. The debt rating process generally provides a good measure of investment risk for common stockholders because the factors considered in the debt rating process are usually relevant factors that a common stock investor would consider in assessing the risk of an investment. Credit rating agencies, such as S&P, assess the risk of an investment into two categories based on: fundamental business analysis; and financial analysis.[14] The business risk analysis includes assessing: Country risk; industry risk; competitive position; and profitability/peer group comparisons. The financial risk analysis includes assessing: accounting; financial governance and policies/risk tolerance; cash flow adequacy; capital structure/asset protection; and liquidity/short-term factors.

[14] *Standard & Poor's*, Corporate Ratings Criteria, General: Criteria Methodology: Business Risk/Financial Risk Matrix Expanded, May 27, 2009 and *Standard & Poor's*, Criteria Corporates General: Corporate Methodology, November 19, 2013.

Q. WHAT IS THE BOND RATING OF PWR AND THE COMPARABLE GROUP?

A. Page 1 of Schedule 10 shows the average bond/credit rating Comparable Group. The Comparable Group has an A credit profile and PWR does not have bonds rated. The major bond rating/credit rating agencies append modifiers, such as +, - for S&P and 1, 2, and 3 for Moody's Investors Service ("Moody's") to each generic rating classification. For example, an "A" credit profile is comprised of three subsets such as A+, A, A- for S&P or A1, A2 or A3 for Moody's. The modifier of either "+" or "1" indicates that the obligation ranks in the higher end of its generic rating category; the modifier "2" indicates a mid-range ranking; and the modifier of "-" or "3" indicates a ranking in the lower end of that generic rating category.

S&P and Moody's publish financial benchmark criteria necessary to obtain a bond rating for different types of utilities. As a generalization, the higher the perceived business risk, the more stringent the financial criteria so the sum of the two, business risk and financial criteria, remains the same.

Q. WHAT ARE SOME FINANCIAL BENCHMARKS APPLIED BY CREDIT RATING AGENCIES FOR RATING PUBLIC UTILITY DEBT?

A. S&P describes their range of financial benchmarks as

> Risk-adjusted ratio guidelines depict the role that financial ratios play in Standard & Poor's rating process, since financial ratios are viewed in the context of a firm's business risk. A company with a stronger competitive position, more favorable business prospects, and more predictable cash flows can afford to undertake added financial risk while maintaining the same credit rating. The guidelines displayed in the matrices make explicit the linkage between financial ratios and levels of business risk.[15]

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[15] Standard & Poor's Corporate Rating Criteria, 2000.

Q. WHAT OTHER INFORMATION IS SHOWN ON SCHEDULE 10?

A. Page 2 of Schedule 10 summarizes the application of S&P's and Moody's measures of financial risk for PWR and the Comparable Group. S&P's and Moody's measures of financial risk are broader than the traditional measure of financial risk (i.e.,leverage). Besides reviewing amounts of leverage employed, S&P and Moody's also focuses on earnings protection and cash flow adequacy.

As is evident from the information shown on page 2 of Schedule 10, for the five years ending in 2017 and for the year 2017, PWR's cash flow adequacy ratios were similar to the Comparable Companies in most instances. Comparing the PWR and the Water Group's measures of cash flow adequacy show that the Water Group has experienced a similar level of cash flow adequacy as PWR; indicating that PWR is a similar investment risk than the Water Group. Prospectively, based upon the Company's construction program, the Company's ratios are likely to be strained. Based solely upon PWR's historical ratios, it is my opinion that PWR's credit profile is similar to the Comparable Companies.

However, based solely upon PWR's size, it is my opinion that PWR's credit profile is lower than the Comparable Groups'. Based on PWR's small size, it is highly likely that PWR's credit profile is below BBB (i.e., BB). An analysis of corporate credit ratings, shown on page 4 of Schedule 10, indicates that there is an 92% (100%-0%-0%-5%-3%=92%) chance that PWR's credit profile falls below BBB based on their small size alone. As S&P has stated, size is significantly correlated to credit ratings. An analysis of corporate credit ratings found The York Water Company to be the smallest utility with

a credit rating. Their credit rating is only A- despite having a capitalization comprised of more than $199 million and a common equity ratio in excess of 57%.

In order to compete with the Comparable Group for capital, in the future, it will be necessary for PWR to achieve higher returns on equity, and increased cash flow just to maintain a similar credit quality.

S&P has stated:

> ... low authorized returns may affect the industry's ability to attract necessary capital to develop new water supplies and upgrade the quality of existing supplies . . . Traditional ratemaking policy has not provided sufficient credit support during the construction cycle of the electric industry over the past 15 years. To avoid a repeat in the water industry, regulators must be aware of the increased challenges the industry faces.[16] (Emphasis added)

Investors will not provide the equity capital necessary for increasing the amount of common equity in a capital structure unless the regulatory authority allows an adequate rate of return on the equity.[17]

Q. WHAT DO YOU CONCLUDE FROM THE VARIOUS MEASURES OF INVESTMENT RISK INFORMATION YOU HAVE TESTIFIED TO?

A. A summary of my conclusions regarding the risk analyses discussed previously is shown in Table 5. Overall, the information summarized in Table 5 indicates that PWR is a similar, but higher investment risk as the Water Group.

[16] Standard & Poor's CreditWeek, May 25, 1992.

[17] National Association of Regulatory Utility Commissioners, loc. cit.

Table 5

Summary of Risk Analyses

	PWR	Water Group Followed by Analysts
1. Business Risk:		
2. Country Risk	Similar Risk Level	
3. Industry Risk	Similar Risk Level	
4. Competitive Position	Similar Risk Level	
5. Profitability/Peer Group Comparisons	Higher Risk Level	
6. Capitalization Ratios & Financial Risk (Leverage)*		Higher Risk Level
7. Debt Cost Rate*	Similar Risk Level	
8. Relative Size:		
9. Regulatory Diversification	Higher Risk Level	
10. Economic Diversification	Higher Risk Level	
11. Demographic Diversification	Higher Risk Level	
12. Diversification of Weather Conditions	Higher Risk Level	
13. Customer Concentration of Revenues	Higher Risk Level	
14. Capital Intensity	Higher Risk Level	
15. Capital Recovery	Higher Risk Level	
16. Lower Liquidity:		
17. Institutional Holdings	Higher Risk Level	
18. Insider Holdings	Higher Risk Level	
19. Percentage of Shares Traded	Higher Risk Level	
20. Required To Meet Clean Water Acts and Safe Drinking Water Act	Similar Risk Level	
21. Credit Market Financial Risk Metrics		Higher Risk Level
22. Cash Flow Adequacy	Similar Risk Level	
23. Credit Rating / Credit Profile	Higher Risk Level	

* - Based on recommended capital structure for rate making purposes.
Comment: The terms "Similar Level " indicates same amount of risk and the terms "Higher Level " indicates greater risk.

CAPITAL COST RATES

Q. WHAT INFORMATION IS SHOWN ON SCHEDULE 11?

A. Schedule 11 reviews long-term and short-term interest rate trends. Long-term and short-term interest rate trends are reviewed to ascertain the “sub-flooring” or “basement” upon which the Comparable Companies’ common equity market capitalization rate is built. Based upon the settled yields implied in the Treasury Bond future contracts and the long-

term and recent trends in spreads between long-term government bonds and A-rated public utility bonds available to me at the time Schedule 11 was prepared, I conclude that the market believes that if the Comparable Companies issued new long-term bonds near term, they would be priced to yield about 4.6% based upon a credit profile of "A." Further, it is reasonable to conclude the market anticipates that long-term government bonds will be priced to yield about 3.4%, near term.

However, prospectively, over the next couple of years, forecasters believe capital costs rates may increase substantially from their current levels. Recently, former Federal Reserve Chairman Alan Greenspan warned that the bond market is on the edge of a collapse that would bring much higher interest rates and may also impact stock prices.

> In a CNBC interview, the longtime central bank chief said the prolonged period of low interest rates is about to end and, with it, a bull market in fixed income that has lasted more than three decades.
>
> "The current level of interest rates is abnormally low and there's only one direction in which they can go, and when they start they will be rather rapid," Greenspan said on "Squawk Box."
>
> That low interest rate environment has been the product of current monetary policy at the institution he helmed from 1987-2006. The Fed took its benchmark rate to near zero during the financial crisis and kept it there for seven years after.
>
> Since December 2015, the Fed has approved four rate hikes, but government bond yields remained mired near record lows.
>
> Greenspan did not criticize the policies of the current Fed. But he warned that the low rate environment can't last forever and will have severe consequences once it ends.
>
> "I have no time frame on the forecast," he said. "I have a chart which goes back to the 1800s and I can tell you that this particular period sticks out. But you have no way of knowing in advance when it will actually trigger."
>
> One point he did make about timing is it likely will be quick and take the market by surprise.
>
> "It looks stronger just before it isn't stronger," he said. Anyone who thinks they can forecast when the bubble will break is "in for a disastrous" experience."
>
> In addition to his general work at the Fed, which also featured an extended period of low rates though nowhere near their current position, Greenspan is widely known for the "irrational exuberance" speech he gave at the

> American Enterprise Institute in 1996. The speech warned about asset prices and said it is difficult to tell when a bubble is about to burst.
> Those remarks foreshadowed the popping of the dot-com bubble, and the phrase has found a permanent place in the Wall Street lexicon.
> "You can never be quite sure when irrational exuberance arises," he told CNBC. "I was doing it as part of a much broader speech and talking about the analysis of the markets and the like, and I wasn't trying to focus short term. But the press loved that term."[18]

Since October 2008, the Federal Reserve has been monetizing US Treasury debt to artificially suppress interest rates through expansionary money policies. The Federal Reserve, with effectively unlimited money at its disposal, intervenes at any time it wishes, in whatever volume it wishes, to make sure that Treasury bond and bill prices and yields are exactly what the Federal Reserve wants them to be. The US Treasury bond market, and mortgage market, has become an artificial market with no connection to objective risk and interest rates.

In August 2011, the Federal Reserve began "Operation Twist." Under "Operation Twist," the Federal Reserve began buying $400 billion of long-dated or long-term US Treasury debt, financed by selling short-term US Treasury debt with three years to go or less. The goal of "Operation Twist" was to try to drive long-term rates lower, which the Federal Reserve thought would help the mortgage market. This process has created an artificial demand for the US Treasury debt themselves, and easily drives interest rates artificially lower and deceives investors into believing US Treasury debt are safe with wide demand. This has resulted in the entire capital system being impacted by the Federal Reserve's distortion of the price of risk.

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[18] CNBC, Greenspan: Bond Bubble About to Break Because of 'Abnormally Low' Interest Rates, 8/4/17, https://www.cnbc.com/2017/08/04/greenspan-bond-bubble-about-to-break-because-of-abnormally-low-interest-rates.html , (8/4/17).

> In the real world of economics, the borrower pays an interest rate to a lender, who makes money (interest) by taking on the risk of lending and deferring gratification. The lender is willing to not spend his money now. In a free market economy, interest rates are essentially a price put on money, and they reflect the time preference of people. Higher interest rates reflect a high demand for borrowing and lower savings. But the higher rates automatically correct this situation by encouraging savings and discouraging borrowing. Lower interest rates will work the opposite way. When the government/central bank tampers with interest rates, savings and lending are distorted, and resources are misallocated. This is evident in looking back on the housing bubble. The artificially low interest rates signaled that there was a high amount of savings. But it was a false signal. There was also a signal for people to borrow more. Again, it was a false signal. As these false signals were revealed, the housing boom turned into a bust.[19]

When there is a crisis in the markets, such as a financial meltdown, market participants usually sell off and move their money to a safer place; fleeing from illiquid, low quality investments to liquid, high quality investments. This flight to quality reflects a collapse of confidence in the financial system and is most evident in short-term interest rates. Prospectively the capital markets will be affected by the upcoming unprecedented large Treasury financings. Investors provide capital based upon risk and return opportunities and investors will not provide common equity capital when higher risk-adjusted returns are available.

Q. ARE THERE OTHER INDICATIONS THAT FORECASTERS BELIEVE CAPITAL COSTS RATES MAY INCREASE SUBSTANTIALLY FROM THEIR CURRENT LEVELS?

A. Yes, consensus forecasts show that interest rates are expected to increase substantially in the next few years. Table 6 shows the forecasted increase in interest rates

[19] Pike, Geoffrey "The Threat of Negative Interest Rates," Wealth Daily, May 30, 2014, http://www.wealthdaily.com/articles/the-threat-of-negative-interest-rates/5185, (6/03/2014)

published in the December 1, 2017 Blue Chip Consensus Forecasts for the period 2020 to 2022. As shown in Table 6, consensus forecasts show interest rates are expected to increase over 80 basis points from current levels. If interest rates were to increase as predicted, investors will not provide common equity capital when higher risk-adjusted returns are available.

Table 6

Blue Chip Financial Forecasts Long-Range Survey (12/1/17)

	Latest Qtr (11/1/18)	Consensus Forecasts (12/1/17)		
	3Q 2018	2020	2021	2022
Interest Rates				
Prime Rate	5.01	5.90	5.80	5.90
3-mo. Treasury Bills	2.08	2.90	2.80	2.80
10 Year Notes	2.93	3.50	3.50	3.50
30 Year Notes	3.07	3.80	3.80	3.90
Aaa Corporate Bond Yield	4.08	4.90	4.90	4.90
Baa Corporate Bond Yield	4.79	5.80	5.80	5.90

COMMON EQUITY COST RATE ESTIMATE

Q. WHAT IS THE BEST METHOD OF ESTIMATING COMMON EQUITY COST RATES?

A. There is no single method (model) suitable for estimating the cost rate for common equity. While a single investor may rely solely upon one model in evaluating investment opportunities, other investors rely on different models. Most sophisticated investors who use an equity valuation model rely on many models in evaluating their common equity investment alternatives. Therefore, the average price of an equity security reflects the

results of the application of many equity models used by investors in determining their investment decisions.

The application of any single model to estimate common equity cost rates is not appropriate because the security price for which the equity cost rate is being estimated reflects the application of many models used in the valuation of the investment. That is, the price of any security reflects the collective application of many models. Accordingly, if only one model is used to estimate common equity cost rates, that cost rate will most likely be different from the collective market's cost rates because the collective valuation in the market reflects more than one method.

Noted financial texts, investor organizations and professional societies all endorse the use of more than one valuation method. "We endorse the dividend discount model, particularly when used for establishing companies with consistent earnings power and when used along with other valuation models. It is our view that, in any case, <u>an investor should employ more than one model</u>."[20] (Emphasis added.)

The American Association of Individual Investors state, "No one area of investment is suitable for all investors and no single method of evaluating investment opportunities has been proven successful all of the time."[21]

In their study guide, the National Society of Rate of Return Analysts state, "No cost of equity model or other concept is recommended or emphasized, nor is any procedure for employing any model recommended . . . it remains important to recognize that alternative

[20] Sidney Cottle, Roger F. Murray and Frank E. Block, <u>Graham and Dodd's Securities Analysis</u> 5th Edition, McGraw-Hill, Inc., 1988, p. 568.

[21] Editorial Policy, <u>AAII Journal</u>, American Association of Individual Investors, Volume 18, No. 1, January 1996, p. 1.

methods exist and have merit in cost of capital estimation. To this end, analysts should be knowledgeable of a broad spectrum of cost of capital techniques and issues."[22]

Several different models should be employed to measure accurately the market-required cost of equity reflected in the price of stock. Therefore, I used three recognized methods including the DCF shown on Schedule 12, the CAPM shown on Schedule 17, and the RP shown on Schedule 18.

DISCOUNTED CASH FLOW

Q. PLEASE EXPLAIN THE DISCOUNTED CASH FLOW MODEL.

A. The DCF is based upon the assumption that the price of a share of stock is equal to a future stream of cash flows to which the holder is entitled. The stream of cash flows is discounted at the investor-required cost rate (cost of capital).

Although the traditional DCF assumes a stream of cash flow into perpetuity, a termination, or sale price can be calculated at any point in time. Therefore, the return rate to the stockholder consists of cash flow (earnings or dividends) received and the change in the price of a share of stock. The cost of equity is defined as:

> ...the minimum rate of return that must be earned on equity finance and investments to keep the value of existing common equity unchanged. This return rate is the rate of return that investors expect to receive on the Company's common stock . . . the dividend yield plus the capital gains yield . . . [23](Emphasis added)

[22] David C. Parcell, The Cost of Capital - A Practitioners Guide, National Society of Rate of Return Analysts, 1995 Edition.

[23] J. Fred Weston and Eugene F. Brigham, Essentials of Managerial Finance, 3rd ed. (The Dryden Press), 1974, p. 504.

Q. PLEASE EXPLAIN HOW YOU CALCULATED YOUR DIVIDEND YIELD IN THE DCF SHOWN ON SCHEDULE 12.

A. As shown on page 1 of Schedule 12, I used the average dividend yield of 2.0% for the Water Group. The individual dividend yields are shown on page 2 of Schedule 12 and are based upon the most recent months' yield, November 2018, and the twelve-month average yield, ending November 2018. The second input to a market DCF calculation is the determination of an appropriate share price growth rate.

Q. WHAT SOURCES OF GROWTH RATES DID YOU REVIEW?

A. I reviewed both historical and projected growth rates. Schedule 13 shows the array of projected growth rates for the Comparable Companies that are published. Specific historical growth rates are shown for informational purposes because I believe the meaningful historical growth rates are already considered when analysts arrive at their projected growth rates. Nonetheless, some investors may still rely on historical growth rates.

Q. PLEASE EXPLAIN THE SOURCES OF THE PROJECTED GROWTH RATES SHOWN ON SCHEDULE 13.

A. I relied upon four sources for projected growth rates, First Call, Reuters, Zacks Investment Research and Value Line.[24]

[24] With the exception of Value Line, the earnings growth rate projections are consensus estimates five-year EPS estimates. These consensus estimates are compiled from more than 1,700 financial analysts and brokerage firms nationwide. It should be noted that none of the consensus forecasts provides projected DPS estimates. Value Line publishes projected Cash flow, EPS and DPS five-year growth projections as well.

Q. DID YOU REVIEW ANY OTHER GROWTH RATES BESIDES THOSE SHOWN ON SCHEDULE 13?

A. Yes. I reviewed EPS growth rates reflecting changes in return rates on book common equity (ROE) over time. I summarized recent ROEs on page 1 of Schedule 14, and compared those to the Water Group's higher levels projected to be achieved by Value Line, as shown on page 2 of Schedule 14. ROEs increase when EPS grows at much higher/faster rates than book value.

I also reviewed industry specific average projected growth rates that are published by Zacks for the industries in which the Comparable Companies operate. According to Zacks, the Water Group's industry is projected to have EPS growth rates that average 9.3% over the next five years.

Q. WHAT DO YOU CONCLUDE FROM THE GROWTH RATES YOU HAVE REVIEWED?

A. Table 7 summarizes some of the various growth rates reviewed.

Table 7

Summary of Growth Rates

	Water Group
Projected 5 Year Growth in EPS	7.6
Actual 5 Year Growth in EPS	8.4
Projected 5 Year Growth in DPS	7.9
Projected 5 Year Growth in EPS for the industry	9.3

Academic studies suggest that growth rate conclusions should be tested for reasonableness against long-term interest rate levels. Further, the minimum growth rate must at least exceed expected inflation levels. Otherwise, investors would experience decreases in the purchasing power of their investment. Finally, the combined result of adding the growth rate to the market value dividend yield must provide a sufficient margin over yields of public utility debt.

Q. WHAT METHOD DID YOU USE TO ARRIVE AT YOUR GROWTH RATE CONCLUSION?

A. No single method is necessarily the correct method of estimating share value growth. It is reasonable to assume that investors anticipate that the Water Group's current ROE will expand to higher levels. The published historical earnings growth rates for the Water Group averages 8.4%. Because there is not necessarily any single means of estimating share value growth, I considered all of this information in determining a growth rate conclusion for the Comparable Companies.

Moreover, while some rate of return practitioners would advocate that mathematical precision should be followed when selecting a growth rate, the fact is that investors do not behave in the same manner when establishing the market price for a stock. Rather, investors consider both company-specific variables and overall market sentiment such as inflation rates, interest rates and economic conditions when formulating their capital gains expectations. This is especially true when one considers the relatively meaningless negative growth rates. That is, use of a negative growth rate in a DCF implies that investors invest with the expectation of losing money.

The range of growth rates previously summarized supports the reasonableness of an expected 7.6% growth rate for the Water Group based primarily on the projected five-year growth rates and considering the Water Group's industry projected EPS growth rates of 9.3%. Like the projected growth rates, this investor-expected growth rate of 7.6% is based on a survey of projected and historical growth rates published by established entities, including First Call, Reuters, Zacks Investment Research and Value Line. Use of information from these unbiased professional organizations provides an objective estimation of investor's expectations of growth. Based on the aforesaid, all growth rates for the Comparison Companies have been considered and have been given weight in determining a 7.6% growth rate for the Water Group.

Q. WHAT IS YOUR MARKET VALUE DCF ESTIMATE FOR THE COMPARABLE COMPANIES?

A. The market value DCF cost rate estimate for the Water Group is 9.7%, as detailed on page 1 of Schedule 12.

Q. ARE THERE OTHER CONSIDERATIONS THAT SHOULD BE TAKEN INTO ACCOUNT IN REVIEWING A MARKET VALUE CAPITALIZATION DCF COST RATE ESTIMATE?

A. Yes. It should be noted that although I recommend specific dividend yields for the Comparable Group, I recommend that less weight be given to the resultant market value DCF cost rate due to the market's current market capitalization ratios and the impact that the market-to-book ratio has on the DCF results. The Comparable Companies' current

market-to-book ratios of 326% and low dividend yields are being affected by the aforementioned policy of the Federal Reserve that has resulted in the mispricing of capital due to artificial interest rates, not DCF fundamentals.

Although the DCF cost for common equity appears to be based upon mathematical precision, the derived result does not reflect the reality of the marketplace since the model proceeds from unconnected assumptions. The traditional DCF derived cost rate for common equity will continuously understate or overstate investors' return requirements as long as stock prices continually sell above or below book value. A traditional DCF model implicitly assumes that stock price will be driven to book value over time. However, such a proposition is not rational when viewed in the context of an investor purchasing stock above book value. It is <u>not</u> rational to assume that an investor would expect share price to <u>decrease</u> 69% (100%÷326%=31%-100%=69%) in value to equal book value.

Utility stocks do not trade in a vacuum. Utility stock prices, whether they are above or below book value, reflect worldwide market sentiment and are not reflective of only one element.

Q. WHAT DO YOU MEAN BY YOUR STATEMENT THAT UTILITY STOCKS ARE NOT TRADED IN A VACUUM?

A. Utility stocks cannot be viewed solely by themselves. They must be viewed in the context of the market environment. Table 8 summarizes recent market-to-book ratios ("M/B") for well-known measures of market value reported in the December 24, 2018 issue of <u>Barron's</u> and the Water Group's average M/B as shown on page 1 of Schedule 14.

Table 8

	M/B Ratios(%)
Dow Jones Industrials	362
Dow Jones Transportation	276
Dow Jones Utilities	200
S&P 500	292
S&P Industrials	383
Vs.	
Water Group	326

Utility stock investors view their investment decisions compared with other investment alternatives, including those of the various market measures shown in Table 8.

Q. HOW DOES A TRADITIONAL DCF IMPLICITLY ASSUME THAT MARKET PRICE WILL EQUAL BOOK VALUE?

A. Under traditional DCF theory, price will equal book value (M/B=1.00) only when a company is earning its cost of capital. Traditional DCF theory maintains that a company is under-earning its cost of capital when the market price is below book value (M/B<1.00), while a company over-earning its cost of capital will have a market price above its book value (M/B>1.00). If this were true, it would imply that the capitalistic free-market is not efficient because the overwhelming majority of stocks would currently be earning more than their cost of capital. Table 8 shows that most stocks sell at an M/B that is greater than 1.0.

Q. PLEASE EXPLAIN WHY SUCH A PHENOMENON WOULD SHOW THAT THE CAPITALISTIC FREE-MARKET IS NOT EFFICIENT.

A. Historically, the S&P Industrials, which represented approximately 400 companies, have sold at an M/B as low as 1.0 only one time out of the 53-year period 1947-1999. Based upon the traditional DCF assumption, which suggests that companies with M/Bs greater than 1.0 earn more than their cost of capital, this data would suggest that the S&P Industrial companies have earned more than their cost of capital while competing in a competitive environment over the 53-year period. In a competitive market, new companies would continually enter the market up to the point that the earnings rate was at least equal to their cost of capital.

During this period the S&P Industrials sold at an average M/B of 223.7% while experiencing a ROE of 15.7% over a period in which interest rates averaged 7.2%. It is important to note that the average ROE of 15.7% is relative to a common equity ratio of more than 60% for the S&P Industrials over many years.

Q. WHAT IS THE SIGNIFICANCE OF INDUSTRIAL COMPANIES' M/B AND THE COST OF CAPITAL FOR A WATER UTILITY?

A. As stated previously, utility stocks do not trade in a vacuum. They must compete for capital with other firms including industrial stocks. Over time, there has been a relationship between M/Bs of industrial stocks and utility stocks. Although industrial stocks have sold at a higher multiple of book value than utility stocks, both have tracked in similar directions. Because utility and industrial stock prices relative to book values move in similar directions, it is irrational to conclude that stock prices that are different from

book value, either higher or lower, suggests that a firm is over-or under-earning its cost of capital when competitive free-markets exist.

Q. DOES THE MARKET VALUE DCF PROVIDE A REASONABLE ESTIMATE OF THE WATER GROUP'S COMMON EQUITY COST RATE?

A. No, the DCF only provides a reasonable estimate of the Comparable Group's common equity cost rate when their market price and book value are similar (M/B=100%).[25] A DCF will overstate a common equity cost rate when M/Bs are below 100% and understate when they are above 100%. Since the Comparable Group's current M/Bs average 326%, the DCF understates their common equity cost rate. Schedule 15 provides a numerical illustration of the impact of M/Bs on investors' market returns and DCF returns. The reason that DCF understates or overstates investors' return requirements depending upon M/B levels is because a DCF-derived equity cost rate is applied to a book value rate base while investors' returns are measured relative to stock price levels. Based upon this, I recommend that less weight be given to the market value DCF cost rate unless the increased financial risk, resulting from applying a market value cost rate to a book value, is accounted for.

Q. HOW DO YOU RESOLVE THE FINANCIAL RISK DIFFERENCE BETWEEN MARKET VALUE COST RATES AND BOOK VALUE COST RATES?

[25] Roger A Morin, Regulatory Finance - Utilities' Cost of Capital, Public Utility Reports, Inc., 1994, pp. 236-237.

A. The basic proposition of financial theory regarding the economic value of a company is based on market value. That is, a company's value is based on its market value weighted average cost of capital.[26] Accordingly, the market value derived cost rate reflects the financial risk or leverage associated with capitalization ratios based on market value, not book value. As shown on page 1 of Schedule 16, for the Water Group there is a large difference in leverage as a result of the average $2,916 million difference in market value common equity and book value common equity. This difference in market values and book values results in debt/equity ratios based on market value of 22.0%/78.0% (debt/equity) verses 46.0%/54.0% (debt/equity) based on book value as shown on page 1 of Schedule 16.

Differences in the amount of leverage employed can be quantified based upon the Comparable Group's leveraged beta being "unleveraged" through the application of the "Hamada Formula". The details of the model are shown on page 2 of Schedule 16. For example, the inputs to the formula for the Water Group market value capitalization consist of their leveraged beta of 0.71, debt ratio of 21.7%, preferred stock ratio of 0.0%, common equity ratio of 78.3% and combined tax rate of 29.00%. The group's unleveraged beta is determined to be .55 through the use of the following Hamada formula:

[26] Shannon P. Pratt, Cost of Capital, John Wiley & Sons, Inc., 1998, pp. 45-46.

$$Bl = Bu\ (1 + (1 - t)\ D/E + P/E)$$

where:

Bl = observed, leveraged beta

Bu = calculated, unleveraged beta

t = income tax rate

D = debt ratio

P = preferred stock ratio

E = common equity ratio

Applying the unleveraged beta of 0.59 along with the Water Group's book value capitalization ratios of 45.8% long-term debt, 0.1% preferred stock and 54.1% common equity and combined tax rate of 29.00% results in a leveraged beta of .84 applicable to the group's book value capitalization. Based upon the Water Group's risk premium of 5.7% and the difference between Water Group's market value leveraged beta, their book value leveraged beta of 0.24 (0.95 - 0.71) indicates that the Water Group's common equity cost rate must be increased by 1.37 (0.24 x 5.7 = 1.37) in recognition of their book value's exposure to more financial risk.

Q. IS THERE ANOTHER WAY TO REFLECT THE FINANCIAL RISK DIFFERENCE THAT EXISTS AS A RESULT OF MARKET CAPITALIZATION RATIOS BEING SIGNIFICANTLY DIFFERENT FROM BOOK VALUE CAPITALIZATION RATIOS?

A. Yes, generally speaking. Although it is possible to know the direction of a financial risk adjustment on common equity cost rate, a specific quantification of financial

risk differences is very difficult. Although the end result of a financial risk adjustment is very subjective and specific quantification very difficult, the direction of the adjustment is clearly known. However, hypothetically if the Comparable Group's debt were rated based on market value debt ratios they would command an Aaa rating. The Comparison Group currently has bonds rated A based upon their book value debt ratios. The yield spread on a bond rated Aaa versus A rated bonds averages 32 basis points or 0.32% as shown on page 3 of Schedule 16.

The end result of the application of the Hamada Model and the bond yield spread indicates that the Water Group market value common equity cost rate equity cost rate should be adjusted upward by at least 0.8% (1.4% hamada est. + 0.3% yield spread = 1.7% ÷ 2 = 0.8%) since it is going to be applied to a book value.

Accounting for the increased amount of leverage between market value derived DCF cost rates and book value cost rates indicates a book value DCF cost rate of 10.5% for the Water Group (9.7% + 0.8% = 10.5%).

CAPITAL ASSET PRICING MODEL

Q. PLEASE BRIEFLY DESCRIBE THE THEORY OF THE CAPITAL ASSET PRICING MODEL.

A. The CAPM is based upon the assumption that investors hold diversified portfolios and that the market only recognizes or rewards non-diversifiable (or systematic) risk when determining the price of a security because company-specific risk (or non-systematic) is removed through diversification. Further, investors are assumed to require additional or higher returns for assuming additional or higher risk. This assumption is captured by

using a beta that provides an incremental cost of additional risk above the base risk-free rate available to investors. The beta of a security reflects the market risk or systematic risk of the security relative to the market. The beta for the market is always equal to 1.00; therefore, a company whose stock has a beta greater than 1.00 is considered riskier than the market, and a company with a beta less than 1.00 is considered less risky than the market. The base risk-free rate is assumed to be a U.S. Government treasury security because they are assumed to be free of default risk.

Q. WHAT RISK-FREE RATE AND BETA HAVE YOU USED IN YOUR CAPM CALCULATION?

A. The risk-free rate used in CAPM should have approximately the same maturity as the life of the asset for which the cost rate is being determined. Because utility assets are long-lived, a long-term Treasury Bond yield serves as an appropriate proxy. Previously, I estimated an appropriate risk-free rate of 3.4% based upon the recent and forward long-term Treasury yields. I used the average beta of 0.71 for the Water Group as shown on page 1 of Schedule 17. However, as stated previously, the Comparable Group's betas are understated due to their small size which affects their stock price changes.

Q. AFTER DEVELOPING AN APPROPRIATE BETA AND RISK-FREE RATE, WHAT ELSE IS NECESSARY TO CALCULATE A CAPM DERIVED COST RATE?

A. A market premium is necessary to determine a traditional CAPM derived cost rate. The market return rate is the return expected for the entire market. The market premium

is then multiplied by the company specific beta to capture the incremental cost of additional risk (market premium) above the base risk-free rate (long-term treasury securities) to develop a risk adjusted market premium. For example, if you conclude that the expected return on the market as a whole is 15% and further assume that the risk-free rate is 8%, then the market premium is shown to be 7% (15% - 8% = 7%).

Further, assume there are two companies, one of which is considered less risky than the market, and therefore has a beta of less than 1.00 or 0.80. The second company has a beta that is greater than 1.00 or 1.20, and is therefore considered riskier than the market. By multiplying the hypothetical 7.0% market premium by the respective betas of 0.80 and 1.20, risk adjusted market premiums of 5.6% (7.0% x 0.80) and 8.4% (7.0% x 1.20) are shown for the company considered less risky than the market and for the company considered more risky than the market, respectively.

Adding the assumed risk-free rate of 8% to the risk adjusted market premiums results in the CAPM derived cost rates of 13.6% (5.6% + 8.0%) for the less risky company and 16.4% (8.4% + 8.0%) for the company considered of greater risk than the market. In fact, the result of this hypothetical CAPM calculation shows that: (1) the least risky company, with the beta of 0.80, has a cost rate of 13.6%; (2) the market, with the beta of 1.00, has a cost rate of 15.0%; and (3) that the higher risk company, with a beta of 1.20, has a cost rate of 16.4%.

Q. HOW DID YOU DEVELOP A MARKET PREMIUM FOR YOUR CAPM?

A. The average projected market premium of 9.0% is developed on page 2 of Schedule 17. It is based upon Value Line's average projected total market return for the next three

to five years of 12.4% less the risk free rate of 3.4%. I also reviewed market premiums derived from Ibbotson Associates' most recent publication concerning asset returns that show a market premium of 6.9%. The Ibbotson Associates' market premium may be on the low side reflective of the higher interest rate environment found during their study (*i.e.*, 5.0%). Equally, the Value Line market premium reflects the Federal Reserve's current artificial interest rate levels while the Ibbotson Associates' market premiums reflect a higher interest rate environment.

Q. HOW DID YOU ADJUST FOR THE IMPACT THAT SIZE HAS ON THE COMPARABLE GROUP'S BETA?

A. The adjustment is reflected in the CAPM size premium. The CAPM size premium is developed on page 4 of Schedule 17. The size premium reflects the risks associated with the Comparable Group's small size and its impact on the determination of their beta. This adjustment is necessary because beta (systematic risk) does not capture or reflect the Comparable Group's small size. I reduced the size premium by the ratio of the Comparison Group's beta to their respective market quartile's beta.

Q. WHAT IS THE COMPARISON GROUP'S MARKET COST OF EQUITY BASED UPON YOUR CAPM CALCULATION?

A. The CAPM based on Ibbotson Associates' historical market returns shows a market cost rate of 9.2% for the Water Group. The CAPM based on Value Line's projected market returns shows an 10.7% for the Water Group, as shown on page 1 of Schedule 17. The Comparable Group's average market value CAPM of 10.0% is based 50% on the

results of the historical market returns and 50% on the projected market returns. Adjusting the market value CAPM based upon the end result of the application of the Hamada Model and the bond yield spread to account for the difference in leverage between market value capitalization ratios and book value ratios discussed previously indicates a cost rate of 10.8% for the Water Group applicable to book value (10.0% + 0.8% = 10.8%).

RISK PREMIUM

Q. WHAT IS A RISK PREMIUM?

A. A risk premium is the common equity investors' required premium over the long-term debt cost rate for the same company, in recognition of the added risk to which the common stockholder is exposed versus long-term debtholders. Long-term debtholders have a stated contract concerning the receipt of dividend and principal repayment whereas common stock investors do not. Further, long-term debtholders have the first claim on assets in case of bankruptcy. A risk premium recognizes the higher risk to which a common stock investor is exposed. The risk premium-derived cost rate for common equity is the simplest form of deriving the cost rate for common equity because it is nothing more than a premium above the prospective level of long-term corporate debt.

Q. WHAT IS THE APPROPRIATE ESTIMATED FUTURE LONG-TERM BORROWING RATE FOR THE COMPARABLE COMPANIES?

A. The estimated near term long-term borrowing rate for the Comparable Companies is 4.6% based upon their credit profile that supports an A bond rating.

Q. WHAT IS THE APPROPRIATE RISK PREMIUM TO BE ADDED TO THE FUTURE LONG-TERM BORROWING RATE?

A. To determine a common equity cost rate, it is necessary to estimate a risk premium to be added to the Comparable Group's prospective long-term debt rate. Investors may rely upon published projected premiums; they also rely upon their experiences of investing in ultimately determining a probabilistic forecasted risk premium.

Projections of total market returns are shown on page 2 of Schedule 18. A projected risk premium for the market can be derived by subtracting the debt cost rate from the projected market return as shown on page 2 of Schedule 18. However, the derived risk premium for the market is not directly applicable to the Comparable Companies because they are less risky than the market. The use of 90% of the market's risk is a conservative estimation of their level of risk as compared to the market.

The midpoint of the risk premium range is 7.1 and the average for the most recent quarter is 7.3% as shown on page 2 of Schedule 18. Based on this, a reasonable estimate of a longer term projected risk premium is 7.2%.

Q. HOW DO INVESTORS' EXPERIENCES AFFECT THEIR DETERMINATION OF A RISK PREMIUM?

A. Returns on various assets are studied to determine a probabilistic risk premium. The most noted asset return studies and resultant risk premium studies are those performed by Ibbotson Associates. However, Ibbotson Associates has not performed asset return studies concerning public utility common stocks. Based upon Ibbotson Associates' methodology of computing asset returns, I calculated annual returns for the S&P utilities

and bonds for the period 1928-2017. The resultant annual returns were then compared to determine a recent risk premium from a recent 20-year period, 1998-2017 and subsequent periods that were each increased by ten years until the entire study period was reviewed (pages 3 and 4 of Schedule 18).

A long-term analysis of rates of return is necessary because it assumes that investors' expectations are, on average, equal to realized long-run rates of return and resultant risk premium. Observing a single year's risk premium, either high or low, may not be consistent with investors' requirements. Further, studies show a mean reversion in risk premiums. In other words, over time, risk premiums revert to a longer-term average premium. Moreover, since the expected rate of return is defined as "the rate of return expected to be realized from an investment; the mean value of the probability distribution of possible results,"[27] a long-term analysis of annual returns is appropriate.

Q. WHAT DO YOU CONCLUDE FROM THE INFORMATION SHOWN ON PAGES 3 AND 4 OF SCHEDULE 18?

A. The average of the absolute range of the S&P Utilities' appropriate average risk premium (i.e., bonds rated AAA to A) was 4.0% during the seven periods studied, as calculated from page 3 of Schedule 18. The credit adjusted longer term risk premiums (i.e., bonds rated A), 1928-2017, and averages 4.2%. The appropriate average (i.e., bonds rated AAA to A) longer term risk premiums, 1928-2017, have an absolute range of 4.2% to 5.1%, and averages 4.6%.

[27] Eugene F. Brigham, Fundamentals of Financial Management, Fifth Edition, The Dryden Press, 1989, p. 106.

The aforementioned premiums are based on total returns for bonds; and reflect their price risk. A bond's price risk is not related to its credit quality and is eliminated when a bond is held to maturity from time of purchase. Using the income returns, page 4 of Schedule 18, for bonds eliminates price risk and better measures an investor's required return based on credit quality. The appropriate average risk premium (i.e., bonds rated AAA to A) based on income returns was 5.1% during the seven periods studied. The credit adjusted longer term risk premiums (i.e., bonds rated A), 1928-2017, and averages 4.7%. The appropriate average (i.e., bonds rated AAA to A) longer term risk premiums, 1928-2017, have an absolute range of 4.7% to 5.1%, and averages 4.9%.

Q. WHAT INFORMATION IS SHOWN ON PAGE 5 OF SCHEDULE 18?

A. Page 5 of Schedule 18 proves and measures the negative relationship between interest rate levels and the resulting risk premium. That is, risk premiums are generally higher when interest rates are low and risk premiums are generally lower when interest rates are high. This was proven by sorting the 90-year period, 1928 to 2017, annual returns based on interest rate level from lowest interest rate to highest interest rate and distributing the results into two equal groups, a 45-year low interest rate environment group and a 45-year high interest rate environment group.

During the period 1928-2017, the 45 years with the lowest interest rates had an average interest rate of 3.0% and reflected a range of interest rates from 2.0% to 4.1%. This period resembles the current interest rate environment of 3.4% discussed previously regarding the CAPM's risk free rate. The risk premium based on total returns during this low interest rate environment produced the appropriate average (i.e., bonds rated AAA to

A) longer term risk premium of 6.5% and a credit adjusted longer term risk premium (i.e., bonds rated A) of 5.7%. The annual income return based risk premium during this low interest rate environment produced the appropriate average (i.e., bonds rated AAA to A) longer term risk premium of 7.4% and a credit adjusted longer term risk premium (i.e., bonds rated A) of 7.1%.

However, during the period 1928-2017, the 45 years with the highest interest rates had an average interest rate of 7.3% and reflected a range of interest rates from 4.2% to 13.5%. This period is far different from the current interest rate environment of 3.4%. The risk premium based on total returns during the highest interest rate environment produced an average longer term risk premium of 2.7% over bonds rated AAA to A and a credit adjusted longer term risk premium (i.e., bonds rated A) of only 2.6%. The annual income return based risk premium during the highest interest rate environment produced an average longer term risk premium of 2.5% over bonds rated AAA to A and a credit adjusted longer term risk premium (i.e., bonds rated A) of only 2.4%.

Over time, risk premiums are mean reverting. They constantly move toward a long-term average reflecting a long-term level of interest rates. That is, an above-average risk premium will decrease toward a long-term average while a below-average risk premium will increase toward a long-term average. In any single year, of course, investor-required rates of return may not be realized and in certain instances, a single year's risk premiums may be negative. Negative risk premiums are not indicative of investors' expectations and violate the basic premise of finance concerning risk and return. Negative risk premiums usually occur only in the stock market's down years (*i.e.*, the years in which the stock markets' return was negative).

When interest rate levels are not considered the credit adjusted longer term risk premium (i.e., bonds rated A), 1928-2017, averages 4.7%, discussed previously regarding page 4 of Schedule 21. However, the annual income return based risk premium during the low interest rate environment produced a credit adjusted longer term risk premium (i.e., bonds rated A) of 7.1%. Since this period resembles the current interest rate environment of 3.4%, a reasonable estimate of investors risk premium based on historical returns is based on an average of the results of the entire 1928-2017 historical market returns, the results of the low interest rate environment, along with the projected market returns to produce a 5.7% risk premium.

Adding the risk premium of 5.7% for the Comparable Group to the prospective cost of newly-issued long-term debt of 4.6% results in a market value risk premium derived cost rate for common equity of 10.3% as reflected on page 1 of Schedule 18. Adjusting the market value risk premium based upon the end result of the application of the Hamada Model and the bond yield spread to account for the difference in leverage between market value capitalization and book value ratios discussed previously indicates a cost rate of 11.1% applicable to book value (10.3% + 0.8% = 11.1%).

SUMMARY OF COMMON EQUITY COST RATE

Q. WHAT IS YOUR COMPARABLE GROUP'S COMMON EQUITY COST RATE?

A. Based upon the results of the models employed, the Water Group's common equity cost rate is in the range of 10.5% to 11.1% as reflected on Schedule 19. Based upon this data, the common equity cost rate for the Water Group is at least 10.75%. My recommendation is based upon the Water Group's 10.75% common equity cost rate.

Q. DO YOU RECOMMEND A COST OF COMMON EQUITY OF 10.75% FOR PWR?

A. Yes. Based upon the financial analysis and risk analysis, I conclude that PWR is exposed to overall similar investment risk as the Comparable Group. This is evidenced by PWR's small size, lower credit profile and the other factors summarized in Table 5 discussed previously being counter balanced by a thicker common equity ratio.

The results of the three models employed for the Water Group shows a current range of common equity cost applicable to book value of PWR of 10.50% (DCF), 10.80% (CAPM), and 11.10% (RP) as shown in Table 9.

Table 9

Summary of the PWR's Equity Cost Rates	
DCF	10.50
CAPM	10.80
RP	11.10

Q. WHAT IS YOUR COMMON EQUITY COST RATE RECOMMENDATION FOR PWR?

A. As discussed above and as shown in Schedule 19, I recommend a 10.75% common equity cost rate for PWR.

Q. HAVE YOU CHECKED THE REASONABLENESS OF YOUR RECOMMENDED COMMON EQUITY RATE FOR PWR?

A. Yes. Page 2 of Schedule 14 reflects the average projected earned return on average book common equity for the companies in the Comparable Group for the period 2021-

2023, which is shown to range from 10.5% to 14.0%. Given the large degree to which regulatory lag and attrition impacts water utilities earning, the range of the comparable utilities' projected earned returns suggests that my recommendation that PWR be permitted an opportunity to earn 10.75% is reasonable, if not conservative.

OVERALL RATE OF RETURN RECOMMENDATION

Q. WHAT IS YOUR OVERALL FAIR RATE OF RETURN RECOMMENDATION FOR THE PWR?

A. Based upon the recommended capital structure and my estimate of the PWR's common equity cost rate, I recommend an overall fair rate of return of 8.45%. The details of my recommendation are shown on Schedule 1.

Q. HAVE YOU TESTED THE REASONABLENESS OF YOUR OVERALL FAIR RATE OF RETURN RECOMMENDATION?

A. Yes. If my recommended overall rate of return is actually earned, it will give PWR ratios that will allow PWR to present a financial profile that will enable it to attract capital necessary to provide safe and reliable wastewater service, at reasonable terms.

Q. DOES THAT CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.

APPENDIX A

Professional Qualifications
of
Harold Walker, III
Manager, Financial Studies
Gannett Fleming Valuation and Rate Consultants, LLC.

EDUCATION

Mr. Walker graduated from Pennsylvania State University in 1984 with a Bachelor of Science Degree in Finance. His studies concentrated on securities analysis and portfolio management with an emphasis on economics and quantitative business analysis. He has also completed the regulation and the rate-making process courses presented by the College of Business Administration and Economics Center for Public Utilities at New Mexico State University. Additionally, he has attended programs presented by The Institute of Chartered Financial Analysts (CFA).

Mr. Walker was awarded the professional designation "Certified Rate of Return Analyst" (CRRA) by the Society of Utility and Regulatory Financial Analysts. This designation is based upon education, experience and the successful completion of a comprehensive examination. He is also a member of the Society of Utility and Regulatory Financial Analysts (SURFA) and has attended numerous financial forums sponsored by the Society. The SURFA forums are recognized by the Association for Investment Management and Research (AIMR) and the National Association of State Boards of Accountancy for continuing education credits.

Mr. Walker is also a licensed Municipal Advisor Representative (Series 50) by Municipal Securities Rulemaking Board (MSRB) and Financial Industry Regulatory Authority (FINRA).

BUSINESS EXPERIENCE

Prior to joining Gannett Fleming Valuation and Rate Consultants, LLC., Mr. Walker was employed by AUS Consultants - Utility Services. He held various positions during his eleven years with AUS, concluding his employment there as a Vice President. His duties included providing and supervising financial and economic studies on behalf of investor owned and municipally owned water, waste water, electric, natural gas distribution and transmission, oil pipeline and telephone utilities as well as resource recovery companies.

In 1996, Mr. Walker joined Gannett Fleming Valuation and Rate Consultants, LLC. In his capacity as Manager, Financial Studies and for the past twenty years, he has continuously studied rates of return requirements for regulated firms. In this regard, he supervised the preparation of rate of return studies in connection with his testimony and in the past, for other individuals. He also assisted and/or developed dividend policy studies, nuclear prudence studies, calculated fixed charge rates for avoided costs involving cogeneration projects, financial decision studies for capital budgeting purposes and developed financial models for determining future capital requirements and the effect of those requirements on investors and ratepayers, valued utility property and common stock for acquisition and divestiture, and assisted in the private placement of fixed capital securities for public utilities.

Head, Gannett Fleming GASB 34 Task Force responsible for developing Governmental Accounting Standards Board (GASB) 34 services, and educating Gannett Fleming personnel and Gannett Fleming clients on GASB 34 and how it may affect them. The GASB 34 related services include inventory of assets, valuation of assets, salvage estimation, annual depreciation rate determination, estimation of depreciation reserve, asset service life determination, asset condition assessment, condition assessment documentation, maintenance estimate for asset preservation, establishment of condition level index, geographic information system (GIS) and data management services, management discussion and analysis (MD&A) reporting, required supplemental information (RSI) reporting, auditor interface, and GASB 34 compliance review.

Mr. Walker was also the Publisher of C.A. Turner Utility Reports from 1988 to 1996. C.A. Turner Utility Reports is a financial publication which provides financial data and related ratios and forecasts covering the utility industry. From 1993 to 1994, he became a contributing author for the Fortnightly, a utility trade journal. His column was the Financial News column and focused mainly on the natural gas industry.

In 2004, Mr. Walker was elected to serve on the Board of Directors of SURFA. Previously, he served as an ex-officio directors as an advisor to SURFA's existing President. In 2000, Mr. Walker was elected President of SURFA for the 2001-2002 term. Prior to that, he was elected to serve on the Board of Directors of SURFA during the period 1997-1998 and 1999-2000. Currently, he also serves on the Pennsylvania Municipal Authorities Association, Electric Deregulation Committee.

EXPERT TESTIMONY

Mr. Walker has submitted testimony or been deposed on various topics before regulatory commissions and courts in 22 states including: Arizona, California, Colorado, Connecticut, Delaware, Illinois, Indiana, Kentucky, Maryland, Massachusetts, Michigan, Missouri, New Hampshire, New Jersey, New York, North Carolina, Oklahoma, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. His testimonies covered various subjects including: fair market value, the taking of natural resources, appropriate capital structure and fixed capital cost rates, depreciation, fair rate of return, purchased water adjustments, synchronization of interest charges for income tax purposes, valuation, cash working capital, lead-lag studies, financial analyses of investment alternatives, and fair value. The following tabulation provides a listing of

the electric power, natural gas distribution, telephone, wastewater, and water service utility cases in which he has been involved as a witness. Additionally, he has been involved in a number of rate proceedings involving small public utilities which were resolved by Option Orders and therefore, are not listed below.

Client	Docket No.
Alpena Power Company	U-10020
Armstrong Telephone Company - Northern Division	92-0884-T-42T
Armstrong Telephone Company - Northern Division	95-0571-T-42T
Artesian Water Company, Inc.	90 10
Artesian Water Company, Inc.	06 158
Aqua Illinois Consolidated Water Divisions and Consolidated Sewer Divisions	11-0436
Aqua Illinois Hawthorn Woods Wastewater Division	07 0620/07 0621/08 0067
Aqua Illinois Hawthorn Woods Water Division	07 0620/07 0621/08 0067
Aqua Illinois Kankakee Water Division	10-0194
Aqua Illinois Kankakee Water Division	14-0419
Aqua Illinois Vermilion Division	07 0620/07 0621/08 0067
Aqua Illinois Willowbrook Wastewater Division	07 0620/07 0621/08 0067
Aqua Illinois Willowbrook Water Division	07 0620/07 0621/08 0067
Aqua Pennsylvania Wastewater Inc	A-2016-2580061
Aqua Pennsylvania Wastewater Inc	A-2017-2605434
Aqua Pennsylvania Wastewater Inc	A-2018-3001582
Aqua Virginia - Alpha Water Corporation	Pue-2009-00059
Aqua Virginia - Blue Ridge Utility Company, Inc.	Pue-2009-00059
Aqua Virginia - Caroline Utilities, Inc. (Wastewater)	Pue-2009-00059
Aqua Virginia - Caroline Utilities, Inc. (Water)	Pue-2009-00059
Aqua Virginia - Earlysville Forest Water Company	Pue-2009-00059
Aqua Virginia - Heritage Homes of Virginia	Pue-2009-00059
Aqua Virginia - Indian River Water Company	Pue-2009-00059
Aqua Virginia - James River Service Corp.	Pue-2009-00059
Aqua Virginia - Lake Holiday Utilities, Inc.	

(Wastewater)	Pue-2009-00059
Aqua Virginia - Lake Holiday Utilities, Inc. (Water)	Pue-2009-00059
Aqua Virginia - Lake Monticello Services Co. (Wastewater)	Pue-2009-00059
Aqua Virginia - Lake Monticello Services Co. (Water)	Pue-2009-00059
Aqua Virginia - Lake Shawnee	Pue-2009-00059
Aqua Virginia - Land'or Utility Company (Wastewater)	Pue-2009-00059
Aqua Virginia - Land'or Utility Company (Water)	Pue-2009-00059
Aqua Virginia - Mountainview Water Company, Inc.	Pue-2009-00059
Aqua Virginia - Powhatan Water Works, Inc.	Pue-2009-00059
Aqua Virginia - Rainbow Forest Water Corporation	Pue-2009-00059
Aqua Virginia - Shawnee Land	Pue-2009-00059
Aqua Virginia - Sydnor Water Corporation	Pue-2009-00059
Aqua Virginia - Water Distributors, Inc.	Pue-2009-00059
Berkshire Gas Company	18-40
Borough of Hanover	R-2009-2106908
Borough of Hanover	R-2012-2311725
Borough of Hanover	R-2014-242830
Chaparral City Water Company	W 02113a 04 0616
California-American Water Company	CIVCV156413
Connecticut-American Water Company	99-08-32
Connecticut Water Company	06 07 08
Citizens Utilities Company Colorado Gas Division	-
Citizens Utilities Company Vermont Electric Division	5426
Citizens Utilities Home Water Company	R 901664
Citizens Utilities Water Company of Pennsylvania	R 901663
City of Bethlehem - Bureau of Water	R-00984375
City of Bethlehem - Bureau of Water	R 00072492
City of Bethlehem - Bureau of Water	R-2013-2390244
City of Dubois – Bureau of Water	R-2013-2350509
City of Dubois – Bureau of Water	R-2016-2554150
City of Lancaster Sewer Fund	R-00005109
City of Lancaster Sewer Fund	R-00049862

City of Lancaster Sewer Fund	R-2012-2310366
City of Lancaster Water Fund	R-00984567
City of Lancaster Water Fund	R-00016114
City of Lancaster Water Fund	R 00051167
City of Lancaster Water Fund	R-2010-2179103
City of Lancaster Water Fund	R-2014-2418872
Coastland Corporation	15-cvs-216
Consumers Pennsylvania Water Company Roaring Creek Division	R-00973869
Consumers Pennsylvania Water Company Shenango Valley Division	R-00973972
Country Knolls Water Works, Inc.	90 W 0458
East Resources, Inc. - West Virginia Utility	06 0445 G 42T
Elizabethtown Water Company	WR06030257
Hampton Water Works Company	DW 99-057
Hidden Valley Utility Services, LP	R-2018-3001306
Hidden Valley Utility Services, LP	R-2018-3001307
Illinois American Water Company	16-0093
Indian Rock Water Company	R-911971
Indiana Natural Gas Corporation	38891
Jamaica Water Supply Company	-
Kentucky American Water Company, Inc.	2007 00134
Middlesex Water Company	WR 89030266J
Millcreek Township Water Authority	55 198 Y 00021 11
Missouri-American Water Company	WR 2000-281
Missouri-American Water Company	SR 2000-282
Mount Holly Water Company	WR06030257
New Jersey American Water Company	WR 89080702J
New Jersey American Water Company	WR 90090950J
New Jersey American Water Company	WR 03070511
New Jersey American Water Company	WR-06030257
New Jersey American Water Company	WR08010020
New Jersey American Water Company	WR10040260
New Jersey American Water Company	WR11070460
New Jersey American Water Company	WR15010035
New Jersey American Water Company	WR17090985
Newtown Artesian Water Company	R-911977

Newtown Artesian Water Company	R-00943157
Newtown Artesian Water Company	R-2009-2117550
Newtown Artesian Water Company	R-2011-2230259
Newtown Artesian Water Company	R-2017-2624240
North Maine Utilities	14-0396
Northern Indiana Fuel & Light Company	38770
Oklahoma Natural Gas Company	PUD-940000477
Pennichuck Water Works, Inc.	DW 04 048
Pennichuck Water Works, Inc.	DW 06 073
Pennichuck Water Works, Inc.	DW 08 073
Pennsylvania Gas & Water Company (Gas)	R-891261
Pennsylvania Gas & Water Co. (Water)	R 901726
Pennsylvania Gas & Water Co. (Water)	R-911966
Pennsylvania Gas & Water Co. (Water)	R-22404
Pennsylvania Gas & Water Co. (Water)	R-00922482
Pennsylvania Gas & Water Co. (Water)	R-00932667
Public Service Company of North Carolina, Inc.	G-5, Sub 565
Public Service Electric and Gas Company	ER181010029
Public Service Electric and Gas Company	GR18010030
Presque Isle Harbor Water Company	U-9702
St. Louis County Water Company	WR-2000-844
Suez Water New Jersey, Inc.	WR18050593
Suez Water Owego-Nichols, Inc.	17-W-0528
Suez Water Pennsylvania, Inc.	R-2018-3000834
Suez Water Pennsylvania, Inc.	A-2018-3003519
Suez Water Pennsylvania, Inc.	A-2018-3003517
Suez Water Rhode Island, Inc.	Docket No. 4800
Town of North East Water Fund	9190
United Water New Rochelle	W-95-W-1168
United Water Toms River	WR-95050219
Valley Water Systems, Inc.	06 10 07
Virginia American Water Company	PUR-2018-00175
West Virginia-American Water Company	15-0676-W-42T
West Virginia-American Water Company	15-0675-S-42T
Wilmington Suburban Water Corporation	94-149
York Water Company	R-901813
York Water Company	R-922168

York Water Company	R-943053
York Water Company	R-963619
York Water Company	R-994605
York Water Company	R-00016236

Exhibit HW-1
Docket No. 2018-82-S
Witness: H. Walker, III

PALMETTO WASTEWATER RECLAMATION, LLC
ELGIN, SOUTH CAROLINA

RATE OF RETURN

EXHIBIT

TO ACCOMPANY THE

DIRECT TESTIMONY

DECEMBER 2018

Prepared by:
GANNETT FLEMING
VALUATION AND RATE CONSULTANTS, LLC

Valley Forge, Pennsylvania

Schedule 1

Palmetto Wastewater Reclamation, LLC (Consolidated)
Cost of Capital and Fair Rate of Return
Test Year Ended August 31, 2018

Type of Capital	Ratios*	Cost Rate* (%)	Weighted Cost Rate (%)
Debt	40.28%	5.04	2.03%
Common Equity	59.72	10.75	6.42
Overall Cost of Capital	100.00%		8.45%

*

Capital Structure from PWR's filing and debt cost is calculated below:

PWR Debt at 8/31/18	Debt	Cost	Debt Cost
Bank of America - Term Loan	$7,050,093	5.08%	$357,919
Bank of America - Revolver	525,445	5.08%	26,676
Advances from PME	7,036,564	5.00%	351,828
Total Debt	$14,612,103	5.04%	$736,423

Before Income Tax Interest Coverage (x) 5.2x
(Based on effective income tax rate of 24.95%.)

Capital Structure Ratios for
The Water Group Followed by Analysts
At 9/30/2018 and Estimated for 2022

	9/30/2018	Est.(1) 2022
Water Group Followed by Analysts		
Long-term Debt	45.8 %	44.8 %
Preferred Stock	0.1	0.1
Common Equity	54.1	55.1
Total	100.0 %	100.0 %

Notes: (1) Project by Value Line for the period 2021 to 2023.

Source of Information: Value Line Investment Survey, 10/12/18
S&P Research Insight

Capital Structure Ratios for
The Water Group Followed by Analysts
At 9/30/2018 and Estimated for 2022

	Actual at 9/30/18		
	Long-term Debt	Preferred Stock	Common Equity
Water Group Followed by Analysts			
American States Water Co	38.8	0.0	61.2
American Water Works Co Inc	56.4	0.0	43.6
Aqua America Inc	52.6	0.0	47.4
California Water Service Gp	50.1	0.0	49.9
Middlesex Water Co	36.3	0.6	63.1
SJW Corp	47.6	0.0	52.4
York Water Co	39.0	0.0	61.0
Average	45.8	0.1	54.1

	Estimated at 2022		
	Long-term Debt	Preferred Stock	Common Equity
Water Group Followed by Analysts			
American States Water Co	46.0	0.0	54.0
American Water Works Co Inc	57.5	0.0	42.5
Aqua America Inc	53.5	0.0	46.5
California Water Service Gp	37.5	0.0	62.5
Middlesex Water Co	37.0	0.5	62.5
SJW Corp	48.0	0.0	52.0
York Water Co	34.0	0.0	66.0
Average	44.8	0.1	55.1

Source of Information: Value Line Investment Survey, 10/12/18
S&P Research Insight

Palmetto Wastewater Reclamation, LLC (Consolidated)
Five Year Analysis
2013 - 2017 (1)

Ln #		2017	2016	2015	2014	2013	Average Ann. Chg(%)	
				(Millions of $)				
	Investor Provided Capital($)							
1	Permanent Capital	28.198	27.145	26.105	5.280	5.578	99.3	
2	Short-Term Debt	0.000	0.000	0.000	0.000	0.000		
3	Total Capital	28.198	27.145	26.105	5.280	5.578	99.3	
4	Total Revenue($)	3.312	3.325	3.438	3.106	3.102	1.8	
5	Construction($)	0.912	1.499	34.979	1.722	2.417	441.9	
							Five Year Average	Average Central Values(9)
6	Effective Income Tax Rate(%)	20.0	20.0	0.0	0.0	0.0	8.0	6.7
	Capitalization Ratios(%)							
7	Long-Term Debt	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Preferred Stock	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Common Equity	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Total	100.0	100.0	100.0	100.0	100.0		
10	Total Debt	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	Preferred Stock	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Common Equity	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Total	100.0	100.0	100.0	100.0	100.0		
	Rates on Average Capital(2)(%)							
13	Total Debt	NA	NA	NA	NA	NA	NA	NA
14	Long-Term Debt	NA	NA	NA	NA	NA	NA	NA
15	Preferred Stock	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Coverage - Including AFC(3)(x)							
16	PreTax Interest	NA	88.6	127.8	104.1	NA	106.8	106.8
17	PreTax Interest + Pref. Div	NA	88.6	127.8	104.1	NA	106.8	106.8
18	PostTax Interest + Pref. Div	NA	71.1	127.8	104.1	NA	101.0	101.0
	Coverage - Excluding AFC(3)(x)							
19	PreTax Interest	NA	88.6	127.1	99.1	NA	104.9	104.9
20	PreTax Interest + Pref. Div	NA	88.6	127.1	99.1	NA	104.9	104.9
21	PostTax Interest + Pref. Div	NA	71.1	127.1	99.1	NA	99.1	99.1
22	GCF / Interest Coverage(4)(x)	NA	116.6	171.7	131.4	NA	139.9	139.9
23	Coverage of Common Dividends(5)(x)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	Construction / Avg. Tot. Capital(%)	3.3	5.6	222.9	31.7	51.9	63.1	29.7
25	NCF / Construction(6)(%)	172.1	114.5	5.7	109.0	88.7	98.0	104.1
26	AFC / Income for Common Stock	0.6	0.0	0.5	4.9	7.2	2.6	2.0
27	GCF / Avg. Tot. Debt(7)(%)	NA	NA	NA	NA	NA	NA	NA
28	GCF / Permanent Capital(8)(%)	5.6	6.3	7.7	35.6	38.4	18.7	16.5

See page 2 of this Schedule for notes.

Palmetto Wastewater Reclamation, LLC (Consolidated)
Five Year Analysis
2013-2017

Notes:

(1) Combined results for each individual company based upon the financials as originally reported. The companies included are: Palmetto Wastewater Reclamation, LLC - Alpine Utilities and Palmetto Wastewater Reclamation, LLC - Woodland Utilities.

(2) Computed by relating total debt interest, long-term debt interest and preferred dividend expense to average of beginning and ending balance of the respective capital outstanding.

(3) The coverage calculations, both including and excluding AFC, represent the number of times available earnings cover the various fixed charges. It should be noted that the pretax coverage including preferred dividends has been grossed up for the income tax paid on the preferred dividends.

(4) GCF or gross cash flow (sum of net income, depreciation, amortization, net deferred income taxes and investment tax credits, less AFC), plus interest charges, divided by interest charges.

(5) GCF (see note 4) less all preferred dividends which cover common dividends.

(6) The percent of GCF (see note 4) less all cash dividends which cover gross construction expenditures.

(7) GCF (see note 4) as a percentage of Permanent Capital (long-term debt, current maturities and preferred, preference and common equity).

(8) GCF (see note 4) as a percentage of average total debt.

(9) Average of the second, third and fourth quintile values.

Source of Information: Annual Reports filed with the SC PSC

Water Group Followed by Analysts
Five Year Analysis
2013 - 2017 (1)

Ln #		2017	2016	2015	2014	2013	Average Ann. Chg(%)	
				(Millions of $)				
	Investor Provided Capital($)							
1	Permanent Capital	2,769.010	2,520.684	2,520.684	2,389.712	2,281.523	5.0	
2	Short-Term Debt	253.900	121.388	121.388	101.836	126.480		
3	Total Capital	3,022.910	2,642.072	2,642.072	2,491.548	2,408.003	6.0	
4	Total Revenue($)	834.658	785.487	785.487	762.461	737.254	3.2	
5	Construction($)	358.338	276.462	276.462	232.566	233.292	12.1	
							Five Year Average	Average Central Values(9)
6	Effective Income Tax Rate(%)	32.1	31.5	31.5	31.2	32.3	31.7	31.5
	Book Capitalization Ratios(%)							
7	Long-Term Debt	44.9	46.2	46.2	45.3	45.6	45.6	45.6
8	Preferred Stock	0.1	0.1	0.1	0.1	0.1	0.1	0.1
9	Common Equity	55.0	53.7	53.7	54.6	54.3	54.3	54.3
	Total	100.0	100.0	100.0	100.0	100.0		
10	Total Debt	48.9	47.8	47.8	47.2	47.9	47.9	47.8
11	Preferred Stock	0.1	0.1	0.1	0.1	0.1	0.1	0.1
12	Common Equity	51.0	52.1	52.1	52.7	52.0	52.0	52.1
	Total	100.0	100.0	100.0	100.0	100.0		
	Rates on Average Capital(2)(%)							
13	Total Debt	5.0	5.2	5.2	5.4	5.5	5.3	5.2
14	Long-Term Debt	NA	NA	NA	NA	NA	NA	0.0
15	Preferred Stock	5.9	5.9	5.9	5.7	4.2	5.5	5.9
	Coverage - Including AFC(3)(x)							
16	PreTax Interest	4.8	4.4	4.4	4.5	3.9	4.4	4.4
17	PreTax Interest + Pref. Div	4.7	4.4	4.4	4.5	3.9	4.4	4.4
18	PostTax Interest + Pref. Div	3.5	3.3	3.3	3.4	3.0	3.3	3.3
	Coverage - Excluding AFC(3)(x)							
19	PreTax Interest	4.6	4.3	4.3	4.5	3.9	4.3	4.3
20	PreTax Interest + Pref. Div	4.6	4.3	4.3	4.5	3.9	4.3	4.3
21	PostTax Interest + Pref. Div	3.4	3.2	3.2	3.4	2.9	3.2	3.2
22	GCF / Interest Coverage(4)(x)	5.9	5.9	5.9	6.0	5.0	5.7	5.9
23	Coverage of Common Dividends(5)(x)	3.7	3.9	3.9	4.3	3.7	3.9	3.9
24	Construction / Avg. Tot. Capital(%)	13.7	10.7	10.7	9.7	9.8	10.9	10.7
25	NCF / Construction(6)(%)	59.3	84.1	84.1	98.6	82.0	81.6	84.1
26	AFC / Income for Common Stock	4.4	2.8	2.8	2.0	2.5	2.9	2.8
27	GCF / Avg. Tot. Debt(7)(%)	23.4	24.9	24.9	27.0	21.8	24.4	24.9
28	GCF / Permanent Capital(8)(%)	12.0	12.0	12.0	13.0	11.1	12.0	12.0

See page 2 of this Schedule for notes.

Water Group Followed by Analysts
Five Year Analysis
2013-2017

Notes:

(1) Average of the achieved results for each individual company based upon the financials as originally reported.

(2) Computed by relating total debt interest, long-term debt interest and preferred dividend expense to average of beginning and ending balance of the respective capital outstanding.

(3) The coverage calculations, both including and excluding AFC, represent the number of times available earnings cover the various fixed charges. It should be noted that the pretax coverage including preferred dividends has been grossed up for the income tax paid on the preferred dividends.

(4) GCF or gross cash flow (sum of net income, depreciation, amortization, net deferred income taxes and investment tax credits, less AFC), plus interest charges, divided by interest charges.

(5) GCF (see note 4) less all preferred dividends which cover common dividends.

(6) The percent of GCF (see note 4) less all cash dividends which cover gross construction expenditures.

(7) GCF (see note 4) as a percentage of Permanent Capital (long-term debt, current maturities and preferred, preference and common equity).

(8) GCF (see note 4) as a percentage of average total debt.

(9) Average of the second, third and fourth quintile values.

Source of Information: Standard & Poor's and Annual Reports

S&P Utilities
Five Year Analysis
2013 - 2017 (1)

Ln #		2017	2016	2015	2014	2013	Average Ann. Chg(%)	
				(Millions of $)				
	Investor Provided Capital($)							
1	Permanent Capital	41,009.063	34,518.780	34,518.780	33,086.738	32,291.157	6.4	
2	Short-Term Debt	3,053.085	2,492.003	2,492.003	2,673.805	2,094.635		
3	Total Capital	44,062.148	37,010.783	37,010.783	35,760.543	34,385.791	6.7	
4	Total Revenue($)	14,573.444	13,896.573	13,896.573	14,567.195	13,924.574	1.2	
5	Construction($)	4,579.722	4,028.248	4,028.248	3,674.978	3,481.847	7.2	
							Five Year Average	Average Central Values(9)
6	Effective Income Tax Rate(%)	18.2	31.1	31.1	29.1	31.9	28.3	31.1
	Book Capitalization Ratios(%)							
7	Long-Term Debt	56.5	53.7	53.7	52.8	52.4	53.8	53.7
8	Preferred Stock	0.5	0.7	0.7	0.7	0.8	0.7	0.7
9	Common Equity	43.0	45.6	45.6	46.5	46.8	45.5	45.6
	Total	100.0	100.0	100.0	100.0	100.0		
10	Total Debt	59.6	56.6	56.6	56.2	55.4	56.9	56.6
11	Preferred Stock	0.4	0.7	0.7	0.7	0.7	0.7	0.7
12	Common Equity	40.0	42.7	42.7	43.1	43.8	42.4	42.7
	Total	100.0	100.0	100.0	100.0	100.0		
	Rates on Average Capital(2)(%)							
13	Total Debt	4.3	4.4	4.4	4.7	4.8	4.5	4.4
14	Long-Term Debt	5.0	5.0	5.0	4.9	5.1	5.0	5.0
15	Preferred Stock	4.0	3.6	3.6	3.7	3.2	3.6	3.6
	Coverage - Including AFC(3)(x)							
16	PreTax Interest	3.2	3.6	3.6	3.6	3.3	3.5	3.6
17	PreTax Interest + Pref. Div	3.2	3.6	3.6	3.5	3.3	3.4	3.5
18	PostTax Interest + Pref. Div	2.7	2.7	2.7	2.7	2.5	2.7	2.7
	Coverage - Excluding AFC(3)(x)							
19	PreTax Interest	3.1	3.5	3.5	3.5	3.2	3.4	3.5
20	PreTax Interest + Pref. Div	3.1	3.5	3.5	3.4	3.2	3.3	3.4
21	PostTax Interest + Pref. Div	2.6	2.6	2.6	2.6	2.4	2.6	2.6
22	GCF / Interest Coverage(4)(x)	5.0	5.5	5.5	5.3	5.0	5.2	5.3
23	Coverage of Common Dividends(5)(x)	3.4	3.5	3.5	4.1	3.8	3.7	3.5
24	Construction / Avg. Tot. Capital(%)	11.4	11.7	11.7	11.3	11.1	11.4	11.4
25	NCF / Construction(6)(%)	60.4	65.2	65.2	75.5	68.1	66.9	65.2
26	AFC / Income for Common Stock	8.6	4.8	4.8	6.3	7.4	6.4	6.3
27	GCF / Avg. Tot. Debt(7)(%)	17.0	19.1	19.1	19.7	18.7	18.7	19.1
28	GCF / Permanent Capital(8)(%)	10.4	11.1	11.1	11.5	10.8	11.0	11.1

See page 2 of this Schedule for notes.

S&P Public Utilities
Five Year Analysis
2013-2017

Notes:

(1) Market value weighted achieved results for each individual company based upon the financials as originally reported.

(2) Computed by relating total debt interest, long-term debt interest and preferred dividend expense to average of beginning and ending balance of the respective capital outstanding.

(3) The coverage calculations, both including and excluding AFC, represent the number of times available earnings cover the various fixed charges. It should be noted that the pretax coverage including preferred dividends has been grossed up for the income tax paid on the preferred dividends.

(4) GCF or gross cash flow (sum of net income, depreciation, amortization, net deferred income taxes and investment tax credits, less AFC), plus interest charges, divided by interest charges.

(5) GCF (see note 4) less all preferred dividends which cover common dividends.

(6) The percent of GCF (see note 4) less all cash dividends which cover gross construction expenditures.

(7) GCF (see note 4) as a percentage of Permanent Capital (long-term debt, current maturities and preferred, preference and common equity).

(8) GCF (see note 4) as a percentage of average total debt.

(9) Average of the second, third and fourth quintile values.

Source of Information: Standard & Poor's, Moody's and Annual Reports

Risk Measures for the Common Stock of
The Water Group Followed by Analysts and the S&P Utilities

	Recent S&P Issuer Credit Rating	Stock Exchange for Company	Recent S&P Common Stock Ranking	Value Line Beta	Recent Market Value (Mill $)	Recent S&P Market Size Index	Market Quartile	Market Quartile Name
Water Group Followed by Analysts								
American States Water Co	A+	New York Stock Exchange	Highest (A+)	0.75	2,464.854	S&P SmallCap 600	2	Mid-Cap
American Water Works Co Inc	A	New York Stock Exchange	Below Average (B)	0.60	17,230.951	S&P 500	1	Large-Cap
Aqua America Inc	A+	New York Stock Exchange	Highest (A+)	0.70	6,101.563	S&P MidCap 400	2	Mid-Cap
California Water Service Gp	A+	New York Stock Exchange	Above Average (A-)	0.75	2,197.669	S&P SmallCap 600	3	Low-Cap
Middlesex Water Co	A	NASDAQ/ NMS/ OTC Bul Brd	Above Average (A-)	0.75	850.072	NOT in a S&P Index	3	Low-Cap
SJW Corp	A	New York Stock Exchange	Above Average (A-)	0.65	1,156.161	NOT in a S&P Index	3	Low-Cap
York Water Co	A-	NASDAQ/ NMS/ OTC Bul Brd	High (A)	0.80	428.308	NOT in a S&P Index	4	Mico-Cap
Average	A		Above Average (A-)	0.71	2,197.669	S&P SmallCap 600	3	Low-Cap
S&P Public Utilities								
AES Corporation	BB+	New York Stock Exchange	Below Average (B)	1.15	10,258.980	S&P 500	2	Mid-Cap
Alliant Energy Corp	A-	New York Stock Exchange	Above Average (A-)	0.70	10,709.135	S&P 500	2	Mid-Cap
Ameren Corp	BBB+	New York Stock Exchange	Below Average (B)	0.65	16,763.592	S&P 500	1	Large-Cap
American Electric Power Co Inc	A-	New York Stock Exchange	Average (B+)	0.65	38,334.293	S&P 500	1	Large-Cap
American Water Works Company Inc	A	New York Stock Exchange	Below Average (B)	0.60	17,230.951	S&P 500	1	Large-Cap
CenterPoint Energy Inc.	A-	New York Stock Exchange	Below Average (B)	0.90	14,038.360	S&P 500	1	Large-Cap
CMS Energy Corp	BBB+	New York Stock Exchange	Above Average (A-)	0.65	14,758.712	S&P 500	1	Large-Cap
Consolidated Edison Inc.	A-	New York Stock Exchange	Average (B+)	0.50	25,027.096	S&P 500	1	Large-Cap
Dominion Resources Inc.	BBB+	New York Stock Exchange	Below Average (B)	0.65	48,907.238	S&P 500	1	Large-Cap
DTE Energy Co	BBB+	New York Stock Exchange	Above Average (A-)	0.65	21,783.699	S&P 500	1	Large-Cap
Duke Energy Corp	A-	New York Stock Exchange	Average (B+)	0.60	63,139.605	S&P 500	1	Large-Cap
Edison International	BBB+	New York Stock Exchange	Below Average (B)	0.60	18,023.865	S&P 500	1	Large-Cap
Entergy Corp.	BBB+	New York Stock Exchange	Below Average (B)	0.65	15,770.223	S&P 500	1	Large-Cap
Eversource Energy	A+	New York Stock Exchange	High (A)	0.65	21,655.988	S&P 500	1	Large-Cap
Exelon Corp	BBB	New York Stock Exchange	Below Average (B)	0.70	44,859.594	S&P 500	1	Large-Cap
FirstEnergy Corp.	BBB	New York Stock Exchange	Below Average (B)	0.65	19,347.965	S&P 500	1	Large-Cap
NextEra Energy Inc	A-	New York Stock Exchange	High (A)	0.65	86,847.383	S&P 500	1	Large-Cap
NiSource Inc.	BBB+	New York Stock Exchange	Below Average (B)	0.60	9,827.263	S&P 500	2	Mid-Cap
NRG Energy Inc	BB	New York Stock Exchange	Below Average (B)	1.25	11,142.010	S&P 500	1	Large-Cap
PG&E Corp	BBB-	New York Stock Exchange	Below Average (B)	0.65	13,682.620	S&P 500	1	Large-Cap
Pinnacle West Capital Corp	A-	New York Stock Exchange	Above Average (A-)	NMF	10,015.469	S&P 500	2	Mid-Cap
PPL Corp	A-	New York Stock Exchange	Below Average (B)	0.75	22,030.918	S&P 500	1	Large-Cap
Public Service Enterprise Group Inc	BBB+	New York Stock Exchange	Average (B+)	0.70	28,254.654	S&P 500	1	Large-Cap
SCANA Corp	BBB-	New York Stock Exchange	Above Average (A-)	0.70	6,654.603	S&P 500	2	Mid-Cap
Sempra Energy	BBB+	New York Stock Exchange	Average (B+)	0.75	31,531.105	S&P 500	1	Large-Cap
Southern Co	A-	New York Stock Exchange	Average (B+)	0.55	48,697.316	S&P 500	1	Large-Cap
WEC Energy Group Inc	A-	New York Stock Exchange	High (A)	0.60	22,869.324	S&P 500	1	Large-Cap
Xcel Energy Inc.	A-	NASDAQ/ NMS/ OTC Bul Brd	Above Average (A-)	0.60	26,960.506	S&P 500	1	Large-Cap
Average	BBB+		Average (B+)	0.69	25,682.945	S&P 500	1	Large-Cap

Comparative Ratios
For Palmetto Wastewater Reclamation, LLC (Consolidated)
The Water Group Followed by Analysts,
S&P Utilities, and S&P 500
For the Years 2013-2017(1)

	2017	2016	2015	2014	2013	Five Year Average
Return on Common Equity(2)						
Palmetto Wastewater Reclamation, LLC (Consolidated)	3.8	3.9	9.5	27.4	39.6	16.8
Water Group Followed by Analysts	11.2	10.4	10.4	11.4	10.0	10.7
S&P Utilities	8.1	8.4	8.4	9.9	8.9	8.7
S&P 500	14.0	12.7	12.0	14.4	14.7	13.6
Market/Book Multiple(3)						
Water Group Followed by Analysts	3.1	2.3	2.3	2.2	2.1	2.4
S&P Utilities	2.2	1.9	1.9	1.9	1.7	1.9
S&P 500	3.1	2.7	2.7	2.7	2.3	2.6
Earnings/Price Ratio(4)						
Water Group Followed by Analysts	3.7	4.6	4.6	5.4	4.8	4.6
S&P Utilities	4.6	4.0	4.0	5.4	5.2	4.6
S&P 500	4.5	4.7	4.4	5.4	6.3	5.1
Dividend Payout Ratio(5)						
Palmetto Wastewater Reclamation, LLC (Consolidated)	0.0	0.0	0.0	0.0	0.0	0.0
Water Group Followed by Analysts	56.4	57.7	57.7	53.2	60.8	57.2
S&P Utilities	84.2	56.9	56.9	77.1	76.1	70.2
S&P 500	43.9	47.7	49.4	38.0	34.5	42.7
Dividend Yield(6)						
Water Group Followed by Analysts	2.0	2.6	2.6	2.7	2.8	2.5
S&P Utilities	3.5	3.7	3.7	3.6	3.9	3.7
S&P 500	2.0	2.2	2.2	2.1	2.2	2.1

See next page for Notes.

Comparative Ratios For
Palmetto Wastewater Reclamation, LLC (Consolidated),
The Water Group Followed by Analysts,
The S&P Utilities, and the S&P 500
For the Years 2013-2017 (1)

Notes:

(1) The average of achieved results for the companies in each group. The information for the S&P Public Utilities is market weighted. The information for the S&P 500 is based upon per share information adjusted to price index level.

(2) Rate of Return on Average Book Common Equity - income available for common equity divided by average beginning and ending year's balance of book common equity.

(3) Market/Book Ratio - average of yearly high-low market price divided by the average of beginning and ending year's book value per share.

(4) Earnings/Price Ratio - reported earnings per share yearly divided by the average of yearly high-low market price.

(5) Dividend Payout Ratio is computed by dividing the yearly reported dividends paid by the yearly income available for common equity.

(6) Dividend Yield - yearly dividend per share divided by the average yearly high-low market price.

Source of Information: Standard & Poor's and Annual Reports

Schedule 7

Capital Intensity and Capital Recovery
Palmetto Wastewater Reclamation, LLC (Consolidated)
The Water Group Followed by Analysts, and S&P Utilities
For the Year 2017

	Capital Intensity	Rate of Capital Recovery	Capital Recovery Years
Palmetto Wastewater Reclamation, LLC (Consolidated)	$9.09	1.74%	57.5
Water Group Followed by Analysts	$5.82	2.24%	45.5
S&P Utilities	$4.17	3.20%	32.9

Schedule 8

Relative Size of
Palmetto Wastewater Reclamation, LLC (Consolidated)
Versus the Water Group Followed by Analysts
For the Year 2017

	Palmetto Wastewater Reclamation, LLC (Consolidated)	Water Group Followed by Analysts	Water Group Followed by Analysts Vs. Palmetto Wastewater Reclamation, LLC
Total Capitalization (000's)	$28,198	$3,023,000	107.2 x
Total Operating Revenues (000's)	$3,312	$835,000	252.1 x
Number of Customers	1,700	794,590	467.4 x

Schedule 9

Institutional Holdings, Insider Holdings and Percentage of Shares Traded Annually for
The Water Group Followed by Analysts, and the S&P Utilities

	Water Group Followed by Analysts	S&P Public Utilities
Percentage of common shares held by insiders (1)	2.9%	0.3%
Percentage of common shares held by institutions (2)	60.8%	77.9%
Percentage Of Common Shares Traded In 2016	127%	177%
Percentage Of Common Shares Traded In 2017	83%	156%
Average Number Of Months For All Common Shares To Turnover (3)	12.7	7.1

Notes: (1) An insider is a director or an officer who has a policy-making role or a person who is directly or indirectly the beneficial owner of more than 10% of a certain company's stock. An insider may be either an individual or a corporation. Insiders are required to disclose their purchase/sale transactions to the SEC in which a change in beneficial ownership has occurred. The filings must be submitted before the end of the second business day following the day on which the transaction had been executed.

(2) Institutional holders are those investment managers having a fair market value of equity assets under management of $100 million or more. Certain banks, insurance companies, investment advisers, investment companies, foundations and pension funds are included in this category.

(3) Based on average turnover (shares traded) over the past five years.

Bond and Credit Ratings for
The Water Group Followed by Analysts

	S&P Credit Rating
Water Group Followed by Analysts	
American States Water Co	A+
American Water Works Co Inc	A
Aqua America Inc *	A+
California Water Service Gp **	A+
Middlesex Water Co	A
SJW Corp ***	A
York Water Co	A-
Average	A

* - The A+ bond rating is that for Aqua Pennsylvania, Inc.
** - The A+ bond rating is that for California Water Service, Inc.
*** - The A bond rating is that for San Jose Water Co.

Comparison of Credit Measures of Financial Risk
Palmetto Wastewater Reclamation, LLC (Consolidated) and
For the Water Group Followed by Analysts(1)

	Spot in Credit Measures of Financial Risk (For the Year 2017)			Trend in Credit Measures of Financial Risk (Five-Year Average 2013-17)		
	Credit Implication	Subject Company	Water Group Followed by Analysts	Credit Implication	Subject Company	Water Group Followed by Analysts
1. Base Credit Metrics						
2. PreTax Interest Coverage(2)(x)	NA	NA	4.6x	Higher	104.9x	4.4x
3. Total Debt/Total Capital(%)	Higher	0.0%	48.9%	Higher	0.0%	48.0%
4. GCF / Interest Coverage(3)(x)	NA	NA	5.9x	Higher	139.9x	5.7x
5. GCF / Average Total Debt(4)(%)	NA	NA	23.4%	NA	NA	24.1%
6. NCF / Construction(5)(%)	Higher	172.1%	59.3%	Higher	98.0%	77.7%
7. Construction / Average Total Capital(6)(%)	Higher	3.3%	13.7%	Lower	63.1%	11.4%
8. Standard & Poor's Credit Metrics						
9. Funds from Operation / Average Total Debt(7)(%)	NA	NA	22.4%	NA	NA	24.1%
10. Average Total Debt / EBITDA(8)(x)	Higher	0.0x	3.4x	Higher	0.0x	3.4x
11. FFO / Interest Coverage(9)(x)	NA	NA	5.7x	Higher	139.9x	5.7x
12. EBITDA / Interest(10)(x)	NA	NA	6.2x	Higher	147.6x	6.0x
13. CFO / Average Total Debt(11)(%)	NA	NA	23.8%	NA	NA	24.4%
14. FOCF / Average Total Debt(12)(%)	NA	NA	-4.6%	NA	NA	0.7%
15. DCF / Average Total Debt(13)(%)	NA	NA	-11.4%	NA	NA	-5.9%
16. Moody's Credit Metrics						
17. Cash Flow Interest Coverage(3) (x)	NA	NA	5.9x	Higher	139.9x	5.7x
18. Cash Flow / Average Total Debt(4)(%)	NA	NA	23.4%	NA	NA	24.1%
19. Retained Cash Flow / Average Total Debt(14)(%)	NA	NA	16.6%	NA	NA	17.5%
20. Average Total Debt / Average Adjusted Total Capital(15j(%)	Higher	0.0%	41.1%	Higher	0.0%	40.0%
21. Capital Credit Metrics						
22. Standard & Poor's Credit Metrics - Adjusted to Total Capital						
23. Funds from Operation / Average Total Capital(16)(%)	Lower	5.7%	10.7%	Higher	21.1%	11.4%
24. Average Total Capital / EBITDA(17)(x)	Lower	15.0x	7.0x	Lower	8.2x	6.9x
25. CFO / Average Total Capital(18)(%)	Lower	6.6%	11.4%	Higher	22.4%	11.5%
26. FOCF / Average Total Capital(19)(%)	Higher	3.4%	-2.3%	Lower	-40.7%	0.1%
27. DCF / Average Total Capital(20)(%)	Higher	3.4%	-5.5%	Lower	-40.7%	-3.0%
28. Moody's Credit Metrics - Adjusted to Total Capital						
29. Cash Flow / Average Total Capital(21)(%)	Lower	5.7%	11.2%	Higher	21.1%	11.4%
30. Retained Cash Flow / Average Total Capital(22)(%)	Lower	5.7%	8.0%	Higher	21.1%	8.3%

See the next page for notes.

Comparison of Credit Market Financial Risk Metrics
For Palmetto Wastewater Reclamation, LLC (Consolidated) and
The Water Group Followed by Analysts
2013 - 2017

Notes:

(1) Average of the achieved results for each individual company based upon the financials as originally reported.

(2) Represents the number of times available pretax earnings ("EBIT"), excluding AFC, cover all interest charges.

(3) GCF or gross cash flow (sum of net income, depreciation, amortization, net deferred income taxes and investment tax credits, less AFC), plus interest charges, divided by interest charges.

(4) GCF (see note 3) as a percentage of average total debt.

(5) The percent of GCF (see note 3) less all cash dividends which cover gross construction expenditures.

(6) Construction expenditures as a percentage of average total capital.

(7) Funds from operations ("FFO"), revenue minus operating expenses, plus depreciation and amortization expenses ("EBITDA") less net interest expense less current tax expense, as a percentage of average total debt.

(8) Average total debt divided by EBITDA (see note 7).

(9) FFO (see note 7) plus interest charges, divided by interest charges.

(10) EBITDA (see note 7) divided by interest charges.

(11) Cash flow from operations ("CFO"), GCF (see note 3) plus changes in operating assets and liabilities (working capital), as a percentage of average total debt.

(12) Free operating cash flow ("FOCF"), CFO (see note 11) minus capital expenditures, as a percentage of average total debt.

(13) Discretionary cash flow ("DCF"), FOCF (see note 12) minus cash dividends as a percentage of average total debt.

(14) The percent of GCF (see note 3) less all cash dividends as a percentage of average total debt.

(15) Average total debt divided by average of total capital plus deferred taxes (balance sheet).

(16) Funds from operations ("FFO"), revenue minus operating expenses, plus depreciation and amortization expenses ("EBITDA") less net interest expense less current tax expense, as a percentage of average total capital.

(17) Average total capital divided by EBITDA (see note 7).

(18) Cash flow from operations ("CFO"), GCF (see note 3) plus changes in operating assets and liabilities (working capital), as a percentage of average total capital.

(19) Free operating cash flow ("FOCF"), CFO (see note 11) minus capital expenditures, as a percentage of average total capital.

(20) Discretionary cash flow ("DCF"), FOCF (see note 12) minus cash dividends as a percentage of average total capital.

(21) GCF (see note 3) as a percentage of average total capital.

(22) The percent of GCF (see note 3) less all cash dividends as a percentage of average total capital.

Source of Information: Standard & Poor's, Moody's and Annual Reports

Distribution of Bond and Credit Ratings for
All Companies Contained in S&P's *Compustat* Database (1)

	Number of Companies In Each Grouping	S&P Bond and Credit Ratings				Range of Reported Permanent Capital By Groupings (Million $)		
		Average	Median	Maximum	Minimum	Smallest	Median	Largest
	100	B+	B	A	CCC-	-2,928.151	376.009	558.000
	100	BB-	B+	AA-	CCC+	561.800	756.861	931.987
	100	BB-	BB-	AA-	Default	932.000	1,094.997	1,273.900
	100	BB	BB	A+	CCC+	1,283.351	1,512.788	1,669.359
	100	BB+	BB+	A	CCC	1,674.200	1,895.810	2,127.131
	100	BB+	BB+	AA	CCC-	2,143.009	2,421.839	2,756.083
	100	BBB-	BBB-	A	CCC+	2,760.856	3,063.411	3,373.200
	100	BB+	BBB-	A+	CCC-	3,376.416	3,661.564	4,062.805
	100	BBB-	BBB-	A+	CCC+	4,074.267	4,604.100	5,251.000
	100	BBB-	BBB-	AA-	B	5,253.000	5,873.850	6,402.000
	100	BBB	BBB	AA	B-	6,402.700	7,189.141	8,397.630
	100	BBB	BBB	AA-	CC	8,433.000	9,659.500	10,879.693
	100	BBB	BBB+	A+	CCC	10,885.000	12,314.022	14,519.835
	100	BBB	BBB	AA-	B	14,539.698	17,349.793	20,154.200
	100	BBB+	BBB+	AAA	B+	20,226.000	24,400.500	31,082.000
	100	BBB+	A-	AA	B	31,316.000	45,328.182	68,278.000
	82	A	A	AAA	BB-	70,378.355	121,191.500	572,140.000
Total	1,682							

Number of Companies In Each Grouping	Range of Reported Permanent Capital By Groupings (Million $)			Distribution of S&P Bond and Credit Ratings By Size Grouping								
	Smallest	Median	Largest	AAA	AA	A	BBB	BB	B	CCC	CC	Default
100	-2,928.151	376.009	558.000	0%	0%	5%	3%	16%	62%	14%	0%	0%
100	561.800	756.861	931.987	0%	1%	3%	11%	32%	50%	3%	0%	0%
100	932.000	1,094.997	1,273.900	0%	1%	5%	18%	36%	33%	6%	0%	1%
100	1,283.351	1,512.788	1,669.359	0%	0%	5%	21%	43%	29%	2%	0%	0%
100	1,674.200	1,895.810	2,127.131	0%	0%	8%	31%	42%	18%	1%	0%	0%
100	2,143.009	2,421.839	2,756.083	0%	1%	8%	41%	32%	16%	2%	0%	0%
100	2,760.856	3,063.411	3,373.200	0%	0%	16%	35%	41%	7%	1%	0%	0%
100	3,376.416	3,661.564	4,062.805	0%	0%	8%	53%	27%	10%	2%	0%	0%
100	4,074.267	4,604.100	5,251.000	0%	0%	14%	44%	26%	15%	1%	0%	0%
100	5,253.000	5,873.850	6,402.000	0%	1%	16%	43%	30%	10%	0%	0%	0%
100	6,402.700	7,189.141	8,397.630	0%	2%	20%	52%	21%	7%	0%	0%	0%
100	8,433.000	9,659.500	10,879.693	0%	1%	26%	50%	17%	5%	0%	1%	0%
100	10,885.000	12,314.022	14,519.835	0%	0%	36%	45%	13%	5%	1%	0%	0%
100	14,539.698	17,349.793	20,154.200	0%	1%	26%	56%	9%	8%	0%	0%	0%
100	20,226.000	24,400.500	31,082.000	1%	7%	30%	45%	14%	3%	0%	0%	0%
100	31,316.000	45,328.182	68,278.000	0%	9%	48%	31%	10%	2%	0%	0%	0%
82	70,378.355	121,191.500	572,140.000	2%	27%	40%	28%	2%	0%	0%	0%	0%
1,682												

Note: (1) Includes all companies contained in S&P's *Compustat* North American Database that have a S&P bond or credit ratings and reported permanent capital for the year 2016 (as of 7/12/17). Companies were sorted based on amount of reported permanent capital and then separated into groups of 100 companies from smallest to largest.

Interest Rate Trends for
Investor-Owned Public Utility Bonds
Yearly for 2012-2016, Monthly for the Years 2017 and 2018

	Years	Aaa Rated	Aa Rated	A Rated	Baa Rated
	2012	NA	3.83	4.13	4.86
	2013	NA	4.24	4.47	4.98
	2014	NA	4.18	4.28	4.80
	2015	NA	4.00	4.12	5.03
	2016	NA	3.73	3.93	4.68
	Average	NA	3.99	4.19	4.87
Jan	2017	NA	3.96	4.14	4.62
Feb	2017	NA	3.99	4.18	4.58
Mar	2017	NA	4.04	4.23	4.62
Apr	2017	NA	3.93	4.12	4.51
May	2017	NA	3.94	4.12	4.50
Jun	2017	NA	3.77	3.94	4.32
Jul	2017	NA	3.82	3.99	4.36
Aug	2017	NA	3.67	3.86	4.23
Sep	2017	NA	3.70	3.87	4.24
Oct	2017	NA	3.74	3.91	4.26
Nov	2017	NA	3.65	3.83	4.16
Dec	2017	NA	3.62	3.79	4.14
Avg	2017	NA	3.82	4.00	4.38
Jan	2018	NA	3.69	3.86	4.18
Feb	2018	NA	3.94	4.09	4.42
Mar	2018	NA	3.97	4.13	4.52
Apr	2018	NA	3.99	4.17	4.58
May	2018	NA	4.10	4.28	4.71
Jun	2018	NA	4.11	4.27	4.71
Jul	2018	NA	4.10	4.27	4.67
Aug	2018	NA	4.08	4.26	4.64
Sep	2018	NA	4.18	4.32	4.74
Oct	2018	NA	4.31	4.45	4.91
Nov	2018 *E*	NA	4.45	4.59	5.03

Source of Information: MERGENT BOND RECORD

E = Estimated from corprate bond yields

Credit Risk Spreads of
Investor-Owned Public Utility Bonds
Yearly for 2012-2016, Monthly for the Years 2017 and 2018

	Years	Aa Over Aaa	A Over Aa	Baa Over A	Baa Over Aaa
	2012	NA	0.30	0.73	NA
	2013	NA	0.23	0.51	NA
	2014	NA	0.10	0.52	NA
	2015	NA	0.12	0.91	NA
	2016	NA	0.20	0.74	NA
	Average	NA	0.19	0.68	NA
Jan	2017	NA	0.18	0.48	NA
Feb	2017	NA	0.19	0.40	NA
Mar	2017	NA	0.19	0.39	NA
Apr	2017	NA	0.19	0.39	NA
May	2017	NA	0.18	0.38	NA
Jun	2017	NA	0.17	0.38	NA
Jul	2017	NA	0.17	0.37	NA
Aug	2017	NA	0.19	0.37	NA
Sep	2017	NA	0.17	0.37	NA
Oct	2017	NA	0.17	0.35	NA
Nov	2017	NA	0.18	0.33	NA
Dec	2017	NA	0.17	0.35	NA
Avg	2017	NA	0.18	0.38	NA
Jan	2018	NA	0.17	0.32	NA
Feb	2018	NA	0.15	0.33	NA
Mar	2018	NA	0.16	0.39	NA
Apr	2018	NA	0.18	0.41	NA
May	2018	NA	0.18	0.43	NA
Jun	2018	NA	0.16	0.44	NA
Jul	2018	NA	0.17	0.40	NA
Aug	2018	NA	0.18	0.38	NA
Sep	2018	NA	0.14	0.42	NA
Oct	2018	NA	0.14	0.46	NA
Nov	2018	NA	0.14	0.44	NA

Source of Information: MERGENT BOND RECORD

Interest Rate Trends
Of Long-Term Treasury Constant
Yearly for 2012-2016, Monthly for the Years 2017 and 2018

	Years	10-Year T-Bond	20-Year T-Bond	30-Year T-Bond	Long-term T-Bond Yield
	2012	1.80	2.54	2.92	2.42
	2013	2.35	3.12	3.45	2.97
	2014	2.54	3.07	3.34	2.98
	2015	2.14	2.55	2.84	2.51
	2016	1.84	2.23	2.60	2.23
	Average	2.13	2.70	3.03	2.62
Jan	2017	2.43	2.75	3.02	2.89
Feb	2017	2.42	2.76	3.03	2.90
Mar	2017	2.48	2.83	3.08	2.96
Apr	2017	2.30	2.67	2.94	2.81
May	2017	2.30	2.70	2.96	2.83
Jun	2017	2.19	2.54	2.80	2.67
Jul	2017	2.32	2.65	2.88	2.77
Aug	2017	2.21	2.55	2.80	2.68
Sep	2017	2.20	2.53	2.78	2.66
Oct	2017	2.36	2.65	2.88	2.77
Nov	2017	2.35	2.60	2.80	2.70
Dec	2017	2.40	2.60	2.77	2.69
Avg	2017	2.33	2.65	2.90	2.78
Jan	2018	2.58	2.73	2.88	2.81
Feb	2018	2.86	3.02	3.13	3.08
Mar	2018	2.84	2.97	3.09	3.03
Apr	2018	2.87	2.96	3.07	3.02
May	2018	2.98	3.05	3.13	3.09
Jun	2018	2.91	2.98	3.05	3.02
Jul	2018	2.89	2.94	3.01	2.98
Aug	2018	2.89	2.97	3.04	3.01
Sep	2018	3.00	3.08	3.15	3.12
Oct	2018	3.15	3.27	3.34	3.31
Nov	2018	3.12	3.27	3.36	3.32

Source of Information: Federal Reserve Bulletin

Spread in Average Long-Term Bond Yields
Versus Public Utility Bond Yields
Yearly for 2012-2016, Monthly for the Years 2017 and 2018

Spread in Average Long-Term T-Bond Yields Versus Public Utility Bonds:

	Years	Aaa Rated	Aa Rated	A Rated	Baa Rated
	2012	NA	1.41	1.71	2.44
	2013	NA	1.26	1.50	2.01
	2014	NA	1.19	1.29	1.82
	2015	NA	1.49	1.61	2.52
	2016	NA	1.50	1.70	2.45
Average		NA	1.37	1.56	2.25
Jan	2017	NA	1.08	1.26	1.74
Feb	2017	NA	1.10	1.29	1.69
Mar	2017	NA	1.09	1.28	1.67
Apr	2017	NA	1.13	1.32	1.71
May	2017	NA	1.11	1.29	1.67
Jun	2017	NA	1.10	1.27	1.65
Jul	2017	NA	1.06	1.23	1.60
Aug	2017	NA	1.00	1.19	1.56
Sep	2017	NA	1.05	1.22	1.59
Oct	2017	NA	0.98	1.15	1.50
Nov	2017	NA	0.95	1.13	1.46
Dec	2017	NA	0.94	1.11	1.46
Avg	2017	NA	1.05	1.23	1.61
Jan	2018	NA	0.89	1.06	1.38
Feb	2018	NA	0.87	1.02	1.35
Mar	2018	NA	0.94	1.10	1.49
Apr	2018	NA	0.98	1.16	1.57
May	2018	NA	1.01	1.19	1.62
Jun	2018	NA	1.10	1.26	1.70
Jul	2018	NA	1.13	1.30	1.70
Aug	2018	NA	1.08	1.26	1.64
Sep	2018	NA	1.07	1.21	1.63
Oct	2018	NA	1.01	1.15	1.61
Nov	2018	NA	1.14	1.28	1.72

Comment: Derived from the information on pages 1 and 3 of this Schedule.

Interest Rate Trends for
Federal Funds Rate and Prime Rate
Yearly for 2012-2016, Monthly for the Years 2017 and 2018

	Years	Fed Funds Rate	Prime Rate
	2012	0.14	3.25
	2013	0.11	3.25
	2014	0.09	3.25
	2015	0.13	3.26
	2016	0.40	3.51
Average		0.17	3.30
Jan	2017	0.65	3.75
Feb	2017	0.66	3.75
Mar	2017	0.79	3.88
Apr	2017	0.90	4.00
May	2017	0.91	4.00
Jun	2017	1.04	4.13
Jul	2017	1.15	4.25
Aug	2017	1.16	4.25
Sep	2017	1.15	4.25
Oct	2017	1.15	4.25
Nov	2017	1.16	4.25
Dec	2017	1.30	4.40
Avg	2017	1.00	4.10
Jan	2018	1.41	4.50
Feb	2018	1.42	4.50
Mar	2018	1.51	4.58
Apr	2018	1.69	4.75
May	2018	1.70	4.75
Jun	2018	1.82	4.89
Jul	2018	1.91	5.00
Aug	2018	1.91	5.00
Sep	2018	1.95	5.03
Oct	2018	2.19	5.25
Nov	2018	2.20	5.25

Source of Information: Federal Reserve Bulletin

Blue Chip Financial Forecasts - December 1, 2018

	Fourth Quarter 2018	First Quarter 2019	Second Quarter 2019	Third Quarter 2019	Fourth Quarter 2019	Five Quarter Average
Prime Rate						
Top Ten Average	5.4 %	5.6 %	5.8 %	6.1 %	6.3 %	5.8 %
Group Average	5.3	5.5	5.7	5.9	6.0	5.7
Bottom Ten Average	5.2	5.4	5.5	5.6	5.5	5.4
Three-Month Treasury Bills						
Top Ten Average	2.4	2.6	2.9	3.0	3.3	2.8
Group Average	2.4	2.5	2.7	2.8	2.9	2.7
Bottom Ten Average	2.3	2.4	2.5	2.6	2.5	2.5
Ten Year Treasury Notes						
Top Ten Average	3.3	3.4	3.6	3.8	3.9	3.6
Group Average	3.2	3.3	3.4	3.4	3.4	3.3
Bottom Ten Average	3.1	3.1	3.1	3.0	2.9	3.0
Thirty Year Treasury Bonds						
Top Ten Average	3.4	3.7	3.9	4.1	4.2	3.9
Group Average	3.4	3.5	3.6	3.6	3.7	3.6
Bottom Ten Average	3.3	3.3	3.3	3.2	3.2	3.3
Aaa-Rated Corporate Bonds						
Top Ten Average	4.4	4.6	4.8	5.1	5.3	4.8
Group Average	4.2	4.5	4.6	4.7	4.8	4.6
Bottom Ten Average	4.1	4.3	4.4	4.3	4.2	4.3
Baa-Rated Corporate Bonds						
Top Ten Average	5.3	5.5	5.7	5.9	6.1	5.7
Group Average	5.1	5.3	5.5	5.5	5.6	5.4
Bottom Ten Average	5.0	5.2	5.2	5.2	5.1	5.1

Derived Public Utility Bond Yield Forecasts Based on Aaa and Baa Corporate Yields

Aa-Rated Public Utility Bonds						
Top Ten Average	4.6	4.8	5.0	5.2	5.4	5.0
Group Average	4.4	4.6	4.8	4.8	4.9	4.7
Bottom Ten Average	4.3	4.5	4.5	4.5	4.4	4.4
A-Rated Public Utility Bonds						
Top Ten Average	4.8	5.0	5.2	5.4	5.6	5.2
Group Average	4.6	4.8	5.0	5.0	5.1	4.9
Bottom Ten Average	4.5	4.7	4.7	4.7	4.6	4.6
Baa-Rated Public Utility Bonds						
Top Ten Average	5.2	5.4	5.6	5.8	6.0	5.6
Group Average	5.0	5.2	5.4	5.4	5.5	5.3
Bottom Ten Average	4.9	5.1	5.1	5.1	5.0	5.0

Settled Yields on Treasury Bond
Future Contracts
Traded on the Chicago Board of Trade
at the Close of December 26, 2018

Delivery Date	Treasury Bonds (CBOT)	
Mar-19	3.560	%
Jun-19	3.589	
Sep-19	3.589	
Average	3.580	%

Source of Information: Chicago Board of Trade

Market Value Discounted Cash Flow for
The Water Group Followed by Analysts

	Water Group Followed by Analysts
Dividend Yield(1)	2.0 %
Growth in Dividends(2)	0.1
Adjusted Dividend Yield	2.1
Stock Appreciation(3)	7.6
Market Value DCF Cost Rate	9.7 %

Notes: (1) Developed on page 2 of this Schedule.
(2) Equal to one-half the assumed growth in value.
(3) As explained in the direct testimony, the growth in value is supported by the information shown on Schedules 13 and 14.

Market Value Dividend Yield for
the Water Group Followed by Analysts
For the Twelve Months Ended November 2018

	Recent Dividend Yields(1)	Longer Term Dividend Yields(2)	Average Yields
Water Group Followed by Analysts			
American States Water Co	1.7 %	1.8 %	
American Water Works Co Inc	2.0	2.0	
Aqua America Inc	2.6	2.4	
California Water Service Gp	1.7	1.8	
Middlesex Water Co	2.0	2.1	
SJW Corp	1.9	2.0	
York Water Co	2.1	2.1	
Average	2.0 %	2.0 %	2.0 %

Notes: (1) Computed by annualizing the current quarterly dividend per share and relating it to the monthly high-low average price per share of common stock for November 2018.

(2) Computed by annualizing the current quarterly dividend per share and relating it to the monthly high-low average price per share of common stock for the twelve months ended November 2018.

Source of Information: Standard & Poor's

Development of Long Term Projected Growth in Value
Based Upon Growth Over The Next Five Years
For the Water Group Followed by Analysts

	A	B	C	D	E	F	G	H
	Analysts' Projected Growth in EPS				Other Projected Growth			
	First Call EPS Growth	Reuters EPS Growth	ZACK's EPS Growth	Value Line EPS Growth	Value Line DPS Growth	Value Line Cash Flow Growth	Average EPS Growth	Average All Growth
Water Group Followed by Analysts								
American States Water Co	6.0 %	6.0 %	6.0 %	6.5 %	8.0 %	6.0 %	6.1 %	6.4 %
American Water Works Co Inc	8.2	10.6	7.8	10.0	10.0	7.0	9.2	8.9
Aqua America Inc	5.0	9.0	5.3	7.5	9.0	6.0	6.7	7.0
California Water Service Gp	9.8	NA	7.0	9.5	6.5	4.5	8.8	7.5
Middlesex Water Co	2.7	NA	NA	9.0	5.5	7.5	5.9	6.2
SJW Corp	14.0	NA	NA	6.0	8.5	3.5	10.0	8.0
York Water Co	4.9	NA	NA	9.0	8.0	8.5	7.0	7.6
Average	7.2 %	8.5 %	6.5 %	8.2 %	7.9 %	6.1 %	7.6 %	7.4 %

	Historical 5-Year Growth in EPS			
	First Call EPS Growth	ZACK's EPS Growth	Value Line EPS Growth	Average EPS Growth
Water Group Followed by Analysts				
American States Water Co	3.6 %	4.4 %	7.0 %	5.0 %
American Water Works Co Inc	8.6	8.4	7.5	8.2
Aqua America Inc	4.6	6.7	9.5	6.9
California Water Service Gp	6.1	7.0	4.0	5.7
Middlesex Water Co	10.6	8.3	8.0	9.0
SJW Corp	19.7	15.8	18.5	18.0
York Water Co	5.4	6.8	6.5	6.2
Average	8.4 %	8.2 %	8.7 %	8.4 %

Source of Information: Value Line Investment Survey, 10/12/18; Reuters Market Guide 12/27/18; FirstCall 12/27/18; and Zacks Investment Research 12/27/18

Recent Payout Ratios,
ROEs, P-E Multiples, Market/Book Multiples, and Market Value
For the Water Group Followed by Analysts

	Current Dividend Payout	Current Return on Equity	PE Mult	Market to Book Mult	Current Market Value (Mill $)
Water Group Followed by Analysts					
American States Water Co	53	11.8	39.2	4.45	2,464.854
American Water Works Co Inc	70	8.2	37.6	2.94	17,230.951
Aqua America Inc	59	12.6	24.5	2.98	6,101.563
California Water Service Gp	51	8.5	37.5	3.09	2,197.669
Middlesex Water Co	62	13.2	27.6	3.47	850.072
SJW Corp	36	10.2	24.5	2.43	1,156.161
York Water Co	64	11.0	32.5	3.45	428.308
Average	56	10.8	31.9	3.26	4,347.083

Source of Information: Quarterly Reports, Standard & Poor's and Value Line

Value Line Projected ROE Based on Year-End and Average,
Dividend Payout Ratio, and Common Equity Ratio for
The Water Group Followed by Analysts for 2021 - 2023

Water Group Followed by Analysts	Value Line Projected ROE	Projected Average ROE (1)	Value Line Projected Dividend Payout	Value Line Projected Common Equity Ratio
American States Water Co	14.0 %	14.3 %	60.0 %	54.0 %
American Water Works Co Inc	10.5	10.9	57.8	42.5
Aqua America Inc	12.5	12.9	64.1	46.5
California Water Service Gp	11.5	11.7	53.7	62.5
Middlesex Water Co	13.0	13.3	50.5	62.5
SJW Corp	14.0	14.3	42.0	52.0
York Water Co	13.5	13.8	62.5	66.0
Average	12.7 %	13.0 %	55.8 %	55.1 %

Notes: (1) Value Line ROE, which is a year-end ROE, is converted to average ROE by the factor derived from the following formula: 2((1+g)/(2+g)), where "g" is the rate of growth in common equity.

Source of Information: Value Line Investment Survey, 10/12/18

Schedule 15

Illustration of the
Effect of Market-To-Book Ratio on Market Return

Ln #		Situation 1	Situation 2	Situation 3
1	M/B Ratio	50%	100%	200%
2	Market Purchase Price	$25.00	$50.00	$100.00
3	Book Value	$50.00	$50.00	$50.00
4	DCF Return	10.0%	10.0%	10.0%
5	DCF Dollar Return	$5.00	$5.00	$5.00
6	Dividend Yield	5.0%	5.0%	5.0%
7	DPS	$1.25	$2.50	$5.00
8	Dollar Growth in Value	$3.75	$2.50	$0.00
9	Market Sale Price	$28.75	$52.50	$100.00
10	Total Market Return	20.0%	10.0%	5.0%

"The simple numerical illustration....demonstrates the impact of market-to-book ratios on the DCF market return....The DCF cost rate of 10%, made up of a 5% dividend yield and a 5% growth rate, is applied to the book value rate base of $50 to produce $5.00 of earnings. Of the $5.00 of earnings, the full $5.00 are required for dividends to produce a dividend yield of 5.0% on a stock price of $100.00, and no dollars are available for growth. The investor's return is therefore only 5% versus his required return of 10%. A DCF cost rate of 10%, which implies $10.00 of earnings, translates to only $5.00 of earnings on book value, or a 5% return.....Therefore, the DCF cost rate understates the investor's required return when stock prices are well above book, as is the case presently."

The above illustration is taken from Roger A Morin, Regulatory Finance - Utilities' Cost of Capital, Public Utility Reports, Inc., 1994, pp. 236-237.

Differences in Book Value and Market Values for the
Water Group Followed by Analysts

	Recent Book Value Capitalization Ratios (9/30/18)	Recent Market Value Capitalization Ratios	Average Book Value of Common Equity (Millions)	Average Market Value of Common Equity (Millions)	Difference in Market Value and Book Value Common Equity
Water Group Followed by Analysts:					
Long Term Debt	45.8 %	21.7 %			
Preferred Stock	0.1	0.0			
Common Equity	54.1	78.3	$1,430.902	$4,347.083	$2,916.180
Total	100.0 %	100.0 %			

Financial Risk Adjustment Using the "Hamada Model"

Water Group Followed by Analysts

Market Value @ (9/30/18)

Line No.						
1 .		DEBT (D)	PREF (P)	CE (E)	TAX (t)	BETA (Bl)
2 .		21.7%	0.0%	78.3%	29.000%	0.71
3 .	Bl = Bu (1+(1-t)D/E+P/E)					
4 .		1-t =	0.7100			
5 .		D/E =	0.2771			
6 .		P/E =	0.0000			
7 .		Bl =	Bu *	1.1968		
8 .		Bu =	0.59			

Water Group Followed by Analysts

Book Value @ (9/30/18)

Line No.					
9 .		DEBT	PREF	CE	TAX
10 .		(D)	(P)	(E)	(t)
11 .		45.80%	0.10%	54.10%	29.000%
12 .	Bl = Bu (1+(1-t)D/E+P/E)				
13 .		1-t =	0.7100		
14 .		D/E =	0.8466		
15 .		P/E =	0.0018		
16 .		Bl =	Bu *	1.6029	
17 .		Bl =	0.95		

Cost Adjustment Based on Risk Premium

Line No.			
18 .	Barometer Group's Beta		0.71
19 .	Beta difference	=	0.24
20 .	Risk premium	=	5.7
21 .	Risk adjustment	=	1.37

Default Spread for
Aaa Rated Corporate Bonds and A Rated Investor-Owned Public Utility Bonds
Yearly for 2012-2016, Monthly for the Years 2017 and 2018

	Years	Corporate Aaa Rated	Public Utility A Rated	A Over Aaa
	2012	3.67	4.13	0.46
	2013	4.24	4.47	0.24
	2014	4.16	4.28	0.11
	2015	3.89	4.12	0.23
	2016	3.67	3.93	0.27
Average		3.92	4.19	0.26
Jan	2017	3.92	4.14	0.22
Feb	2017	3.95	4.18	0.23
Mar	2017	4.01	4.23	0.22
Apr	2017	3.87	4.12	0.25
May	2017	3.85	4.12	0.27
Jun	2017	3.68	3.94	0.26
Jul	2017	3.70	3.99	0.29
Aug	2017	3.63	3.86	0.23
Sep	2017	3.63	3.87	0.24
Oct	2017	3.60	3.91	0.31
Nov	2017	3.57	3.83	0.26
Dec	2017	3.51	3.79	0.28
Avg	2017	3.74	4.00	0.25
Jan	2018	3.55	3.86	0.31
Feb	2018	3.82	4.09	0.27
Mar	2018	3.87	4.13	0.26
Apr	2018	3.85	4.17	0.32
May	2018	4.00	4.28	0.28
Jun	2018	3.96	4.27	0.31
Jul	2018	3.87	4.27	0.40
Aug	2018	3.88	4.26	0.38
Sep	2018	3.98	4.32	0.34
Oct	2018	4.14	4.45	0.31
Nov	2018	4.22	4.59	0.37

Source of Information: MERGENT BOND RECORD

Market Value CAPM for
The Water Group Followed by Analysts

	Water Group Followed by Analysts
Estimation Based Upon Historical Information	
Market Premium(1)	6.9 %
x Beta(2)	0.71
Risk Adjusted Market Premium	4.9
Size Adjustment Premium(2)	0.9
Plus Risk Free Rate(1)	3.4
Market Value CAPM Cost Rate	9.2 %
Estimation Based Upon Projected Information	
Market Premium(1)	9.0 %
x Beta(2)	0.71
Risk Adjusted Market Premium	6.4
Size Adjustment Premium(2)	0.9
Plus Risk Free Rate(1)	3.4
Market Value CAPM Cost Rate	10.7 %

Market Value CAPM is: 10.0%

Notes: (1) Developed on page 2 of this Schedule.
(2) Developed on page 4 of this Schedule.

Development of Market Premiums for Use in a CAPM Model

A	B	C	D	E	F	G	H
Value Line Summary & Index Month End Edition	Forecasted Market Dividend Yield	Stock Price Appreciation Next 3-5 Years	Annual Price Appreciation(1)	Annual Total Return(1)	Midpoint Market Return(2)	Average Market Return(3)	CAPM Projected Market Return(6)
August-18	2.0 %	40 %	8.8 %	10.8 %			
October-18	2.2	50	10.7	12.9			
November-18	2.2	55	11.6	13.8			
					12.3 %	12.5 %	12.4 %
					Less Risk Free Rate(4)		3.4
			Estimated Market Premium Based Upon Projected Information (1)				9.0 %
			Estimated Market Premium Based Upon Historical Information (5)				6.9 %

See next page of this Schedule for Notes.

CAPM
The Water Group Followed by Analysts

Notes: (1) A projected market premium is based upon the projected market return rate derived from the Value Line Summary and Index for the various dates shown. For example, Value Line projects (Nov-18) that the market will appreciate in price 55% over the next three to five years. Using a four-year midpoint estimate, Value Line's appreciation potential equates to 11.6% annually ([1.55]^.25). Additionally, Value Line estimates the market will have a dividend yield of 2.2%. Combining the market dividend yield of 2.2% with the market appreciation results in a projected market return rate of 13.8% (11.6% + 2.2%).

(2) Mid point of the month-end total market returns in Column E.

(3) Average total market return in Column E.

(4) As discussed in the direct testimony, the risk-free rate is 3.4%.

(5) The historical market premium is based upon studies conducted by Ibbotson Associates concerning asset returns. Ibbotson Associates' asset return studies are the most noted asset return rate studies available today. The results are widely disseminated throughout the investment public. Ibbotson Associates' long-term common stock total market return is 11.95% which, when reduced by the long-term historic risk-free rate of 5.02% results in a market premium of 6.9% (11.95% - 5.02%).

Recent Market Values and
Beta Adjusted Ibbotson Associates Size Premiums For
The Water Group Followed by Analysts

	1	2	3	4	5	6	7	8
	Recent Market Value (Mill $)	Market Quartile Name	Market Quartile	Quartile Size Premium	Quartile Beta	Value Line Beta	Beta Ratio	Beta Adjusted Quartile Size Premium
Water Group Followed by Analysts								
American States Water Co	$2,464.854	Mid-Cap	2	1.02	1.12	0.75	67%	0.7
American Water Works Co Inc	17,230.951	Large-Cap	1	0.00	1.00	0.60	60%	0.0
Aqua America Inc	6,101.563	Mid-Cap	2	1.02	1.12	0.70	63%	0.6
California Water Service Gp	2,197.669	Low-Cap	3	1.75	1.22	0.75	61%	1.1
Middlesex Water Co	850.072	Low-Cap	3	1.75	1.22	0.75	61%	1.1
SJW Corp	1,156.161	Low-Cap	3	1.75	1.22	0.65	53%	0.9
York Water Co	428.308	Mico-Cap	4	3.67	1.35	0.80	59%	2.2
Average		Low-Cap	3	1.75	1.22	0.71	61%	0.9

Source of Information: 2017 SBBI Yearbook, Stocks, Bonds, Bills, and Inflation, and Value Line

Market Value Risk Premium
For the Water Group Followed by Analysts

	Water Group Followed by Analysts	
Prospective Public Utility Bond Yields(1)	4.6	%
Estimated Risk Premium(2)	5.7	
Market Value Risk Premium Indicated Cost Rate	10.3	%

Notes: (1) Based upon the current and prospective long-term debt cost rates, it is reasonable to expect that if the comparable group (i.e., Water Group) issued new long-term bonds, it would both be priced to yield about 4.6% based upon credit profiles of A for the Water Group.

(2) A 5.7% risk premium is concluded for the Group after reviewing the tabulation of risk spreads shown on pages 2, 3, 4 and 5 of this Schedule.

Development of the Projected Risk Premium

A	B	C	D	E	F	G	H	I
Value Line Summary & Index Month End Edition	Forecasted Market Dividend Yield	Stock Price Appreciation Next 3-5 Years	Annual Price Appreciation	Forecasted Annual Total Return	Less: Yield of Moody's A Rated Industrial Bonds	Forecasted Equity Premium	Estimated Risk Adjustment	Forecasted Risk Premium
August-18	2.0 %	40 %	8.8 %	10.8 %	4.30 %	6.5 %	90 %	5.9 %
October-18	2.2	50	10.7	12.9	4.45	8.5	90	7.6
November-18	2.2	55	11.6	13.8	4.58	9.2	90	8.3
		Midpoint of data		12.3		7.9		7.1 %
		Quarter's Average		12.5		8.1		7.3 %

Annual Total Returns and Risk Premiums of
S&P Public Utility Stocks and Bonds
for the Years 1998-2017, 1988-2017, 1978-2017, 1968-2017,1958-2017, 1948-2017 and 1928-2017

	Annual Total Returns						
			Public Utility Bonds				
Periods	Public Utility Stock	L-Term T-Bonds	AAA	AAA & AA	AA	A	BBB
Average Annual Rates of Return							
1998 to 2017	0.1103	0.0764	0.0612	0.0834	0.0836	0.0851	0.0901
1988 to 2017	0.1252	0.0912	0.1104	0.0987	0.0990	0.0978	0.1041
1978 to 2017	0.1362	0.0956	0.1079	0.1013	0.1023	0.1020	0.1080
1968 to 2017	0.1232	0.0853	0.0930	0.0926	0.0935	0.0944	0.1003
1958 to 2017	0.1232	0.0726	0.0747	0.0793	0.0801	0.0814	0.0870
1948 to 2017	0.1244	0.0636	0.0633	0.0699	0.0707	0.0716	0.0765
1928 to 2017	0.1108	0.0575	0.0594	0.0657	0.0668	0.0690	0.0758
Average Risk Premiums							
1998 to 2017		0.0339	0.0490	0.0268	0.0266	0.0252	0.0202
1988 to 2017		0.0340	0.0148	0.0265	0.0261	0.0274	0.0211
1978 to 2017		0.0406	0.0283	0.0349	0.0339	0.0342	0.0282
1968 to 2017		0.0505	0.0485	0.0438	0.0430	0.0418	0.0361
1958 to 2017		0.0505	0.0485	0.0438	0.0430	0.0418	0.0361
1948 to 2017		0.0608	0.0612	0.0545	0.0537	0.0528	0.0479
1928 to 2017		0.0533	0.0514	0.0451	0.0440	0.0418	0.0350

Annual Total Returns, Annual Income Returns and Risk Premiums of
S&P Public Utility Stocks and Bonds
for the Years 1998-2017, 1988-2017, 1978-2017, 1968-2017,1958-2017, 1948-2017 and 1928-2017

		Annual Income Returns					
			Public Utility Bonds				
Periods	Annual Total Returns Public Utility Stock	L-Term T-Bonds	AAA	AAA & AA	AA	A	BBB
Average Rates of Return							
1998 to 2017	0.1103	0.0429	0.0732	0.0565	0.0566	0.0582	0.0629
1988 to 2017	0.1252	0.0541	0.0810	0.0661	0.0663	0.0681	0.0722
1978 to 2017	0.1362	0.0672	0.0950	0.0786	0.0791	0.0814	0.0859
1968 to 2017	0.1232	0.0676	0.0901	0.0788	0.0794	0.0817	0.0862
1958 to 2017	0.1232	0.0633	0.0800	0.0733	0.0738	0.0760	0.0800
1948 to 2017	0.1244	0.0581	0.0708	0.0672	0.0677	0.0698	0.0736
1928 to 2017	0.1108	0.0513	0.0609	0.0601	0.0608	0.0634	0.0682
Average Risk Premiums							
1998 to 2017		0.0674	0.0370	0.0537	0.0536	0.0521	0.0473
1988 to 2017		0.0711	0.0442	0.0591	0.0589	0.0571	0.0530
1978 to 2017		0.0690	0.0412	0.0576	0.0571	0.0548	0.0503
1968 to 2017		0.0598	0.0432	0.0499	0.0493	0.0472	0.0431
1958 to 2017		0.0598	0.0432	0.0499	0.0493	0.0472	0.0431
1948 to 2017		0.0663	0.0536	0.0572	0.0567	0.0546	0.0508
1928 to 2017		0.0595	0.0499	0.0507	0.0500	0.0474	0.0426

Annual Total Returns, Annual Income Returns and Risk Premiums of
S&P Public Utility Stocks and Bonds
For the 45 Years of the Lowest Interest Rate Environment and the 45 Years of the Highest Interest Rate Environment
For The Years 1928-2017

Current Interest Rate Environment: 3.4%

			Public Utility Bonds				
Periods	Public Utility Stock	L-Term T-Bonds	AAA	AAA & AA	AA	A	BBB
Annual Total Returns							
Low Interest Rate Environment:							
45 Years of the Lowest Interest Rates, Ranging from 2.0% to 4.1% with an Average Rate of 3.0%							
Average Rates of Return	0.1115	0.0310	0.0361	0.0474	0.0486	0.0541	0.0659
Average Risk Premiums		0.0805	0.0754	0.0640	0.0628	0.0574	0.0456
High Interest Rate Environment:							
45 Years of the Highest Interest Rates, Ranging from 4.2% to 13.5% with an Average Rate of 7.3%							
Average Risk Premiums	0.1102	0.0841	0.0815	0.0840	0.0850	0.0839	0.0857
Average Risk Premiums		0.0261	0.0286	0.0261	0.0252	0.0262	0.0245
Annual Income Returns							
Low Interest Rate Environment:							
45 Years of the Lowest Interest Rates, Ranging from 2.0% to 4.1% with an Average Rate of 3.0%							
Average Rates of Return	0.1115	0.0296	0.0346	0.0372	0.0379	0.0408	0.0467
Average Risk Premiums		0.0818	0.0769	0.0742	0.0736	0.0706	0.0648
High Interest Rate Environment:							
45 Years of the Highest Interest Rates, Ranging from 4.2% to 13.5% with an Average Rate of 7.3%							
Average Risk Premiums	0.1102	0.0730	0.0858	0.0831	0.0838	0.0860	0.0898
Average Risk Premiums		0.0372	0.0244	0.0271	0.0264	0.0241	0.0203

Annual Total Returns of
S&P Public Utility Stocks and Bonds
for the Years 1928-2017

	Annual Total Returns						
			Public Utility Bonds				
Years	Public Utility Stocks	L-Term T-Bonds	AAA	AAA & AA	AA	A	BBB
1928	0.5431	-0.0030	0.0370	0.0388	0.0406	0.0372	0.0392
1929	0.1376	0.0410	0.0209	0.0193	0.0178	0.0163	-0.0076
1930	-0.2149	0.0509	0.0917	0.0892	0.0869	0.0820	0.0378
1931	-0.3193	-0.0782	0.0058	-0.0059	-0.0171	-0.0608	-0.1089
1932	-0.0724	0.1736	0.1073	0.1037	0.1003	0.0685	0.0570
1933	-0.2170	0.0090	0.0142	-0.0145	-0.0401	-0.0686	-0.0601
1934	-0.1743	0.0962	0.1712	0.2000	0.2272	0.3264	0.4593
1935	0.6914	0.0610	0.1053	0.1243	0.1427	0.1760	0.2885
1936	0.2357	0.0691	0.0783	0.0916	0.1046	0.1079	0.1078
1937	-0.3337	-0.0091	0.0290	0.0323	0.0357	0.0272	-0.0626
1938	0.1020	0.0662	0.0720	0.0773	0.0825	0.0884	0.1505
1939	0.1538	0.0692	0.0435	0.0473	0.0510	0.0851	0.0923
1940	-0.1643	0.0910	0.0480	0.0506	0.0532	0.0949	0.1359
1941	-0.3050	0.0234	0.0255	0.0291	0.0327	0.0428	0.0681
1942	0.1079	-0.0735	0.0261	0.0287	0.0313	0.0314	0.0590
1943	0.4750	0.0228	0.0312	0.0346	0.0380	0.0405	0.0564
1944	0.1879	0.0268	0.0343	0.0353	0.0362	0.0303	0.0459
1945	0.5665	0.1075	0.0298	0.0349	0.0383	0.0683	0.0805
1946	-0.0130	-0.0006	0.0233	0.0238	0.0242	0.0267	0.0377
1947	-0.1236	-0.0165	-0.0139	-0.0187	-0.0234	-0.0213	-0.0105
1948	0.0451	0.0202	0.0287	0.0317	0.0347	0.0225	0.0073
1949	0.3074	0.0760	0.0718	0.0746	0.0773	0.0892	0.0757
1950	0.0152	-0.0034	0.0126	0.0131	0.0135	0.0107	0.0233
1951	0.2075	-0.0541	-0.0393	-0.0393	-0.0393	-0.0468	-0.0268
1952	0.1947	0.0101	0.0373	0.0390	0.0407	0.0442	0.0399
1953	0.0918	0.0062	0.0078	0.0063	0.0048	0.0107	0.0037
1954	0.2269	0.0676	0.0668	0.0701	0.0733	0.0745	0.0909
1955	0.1357	-0.0264	-0.0107	-0.0127	-0.0147	-0.0100	0.0146
1956	0.0416	-0.0484	-0.0703	-0.0703	-0.0703	-0.0714	-0.0816
1957	0.0541	0.0472	0.0246	0.0229	0.0213	0.0054	-0.0131
1958	0.3827	-0.0439	-0.0081	-0.0032	0.0017	0.0123	0.0339
1959	0.0958	-0.0320	-0.0231	-0.0234	-0.0237	-0.0120	-0.0102
1960	0.1680	0.1106	0.0764	0.0735	0.0705	0.0791	0.0994
1961	0.3646	0.0135	0.0432	0.0448	0.0464	0.0502	0.0442
1962	-0.0519	0.0650	0.0831	0.0829	0.0828	0.0852	0.0891
1963	0.1261	-0.0022	0.0171	0.0202	0.0232	0.0294	0.0329
1964	0.1685	0.0439	0.0394	0.0391	0.0387	0.0409	0.0396
1965	0.0489	-0.0064	-0.0010	-0.0014	-0.0018	-0.0044	0.0050
1966	-0.0504	0.0085	-0.0501	-0.0509	-0.0518	-0.0602	-0.0990
1967	-0.0216	-0.0650	-0.0525	-0.0539	-0.0553	-0.0592	-0.0271
1968	0.1419	0.0149	0.0268	0.0224	0.0181	0.0286	0.0243
1969	-0.1769	-0.0640	-0.0792	-0.0839	-0.0885	-0.0960	-0.0892
1970	0.1494	0.1537	0.0970	0.0978	0.0987	0.0952	0.0761
1971	0.0050	0.0999	0.1168	0.1241	0.1313	0.1510	0.1681
1972	0.1464	0.0661	0.0912	0.0980	0.1047	0.1103	0.1387
1973	-0.2106	-0.0893	0.0158	0.0138	0.0118	0.0156	0.0150
1974	-0.2135	0.0092	-0.0315	-0.0360	-0.0405	-0.0683	-0.1033
1975	0.4364	0.0465	0.0915	0.0863	0.0813	0.0872	0.0940
1976	0.3245	0.1955	0.1976	0.2017	0.2058	0.2475	0.2806
1977	0.1076	0.0074	0.0459	0.0545	0.0629	0.0683	0.0903
1978	-0.0174	-0.0189	-0.0083	-0.0055	-0.0027	-0.0026	0.0000
1979	0.1221	-0.0289	-0.0424	-0.0509	-0.0590	-0.0655	-0.0823
1980	0.1275	-0.0804	-0.0782	-0.0778	-0.0773	-0.0702	-0.0649
1981	0.1464	0.0472	0.0616	0.0674	0.0730	0.0416	0.0674
1982	0.2292	0.4323	0.3294	0.3750	0.3942	0.3708	0.3808
1983	0.2372	-0.0049	0.0721	0.0691	0.0763	0.1406	0.1347
1984	0.2219	0.1611	0.1770	0.1796	0.1768	0.1783	0.2075
1985	0.3232	0.3143	0.3473	0.3276	0.3259	0.3143	0.3098
1986	0.3575	0.3692	0.2994	0.2720	0.2698	0.2835	0.2933
1987	-0.0544	-0.1013	-0.1132	-0.0637	-0.0566	-0.0435	-0.0505
1988	0.1849	0.1026	0.2027	0.1615	0.1594	0.1643	0.1919
1989	0.4351	0.2176	0.1770	0.1743	0.1715	0.1692	0.1781
1990	0.0069	0.0482	0.0685	0.0689	0.0722	0.0738	0.0728
1991	0.0931	0.1472	0.1813	0.1647	0.1624	0.1715	0.1878
1992	0.1183	0.1093	0.1264	0.1312	0.1324	0.1355	0.1315
1993	0.1661	0.2162	0.1926	0.2126	0.2190	0.1429	0.1590
1994	-0.0825	-0.1075	-0.0802	-0.0656	-0.0657	0.0065	-0.0351
1995	0.3772	0.3268	0.2860	0.3074	0.3089	0.2164	0.2442
1996	0.0550	0.0020	0.0279	0.0211	0.0214	0.0279	0.0415
1997	0.1959	0.1454	0.1181	0.1157	0.1169	0.1238	0.1496
1998	0.1896	0.1786	0.1431	0.0365	0.0289	0.1074	0.0981
1999	-0.0998	-0.1062	-0.0792	-0.0275	-0.0237	-0.0921	-0.0684
2000	0.5475	0.1922	0.1076	0.1150	0.1146	0.1101	0.1196
2001	-0.2877	0.0596	0.0734	0.0788	0.0873	0.0780	0.0534
2002	-0.2934	0.1362		0.1851	0.1851	0.2461	0.1746
2003	0.2509	0.0488		0.1678	0.1678	0.1529	0.2329
2004	0.2763	0.0861		0.1162	0.1162	0.0782	0.0919
2005	0.2151	0.0520		0.0869	0.0869	0.0732	0.0541
2006	0.2323	0.0421		0.0486	0.0486	0.0596	0.0759
2007	0.1434	0.0814		0.0043	0.0043	0.0143	0.0042
2008	-0.3160	0.2953		0.0733	0.0733	0.0132	-0.1109
2009	0.1801	-0.1460		0.1159	0.1159	0.1662	0.3279
2010	0.0795	0.0755		0.0809	0.0809	0.0871	0.0893
2011	0.2051	0.3271		0.2701	0.2701	0.2505	0.2019
2012	0.1272	0.0622		0.0801	0.0801	0.0955	0.1287
2013	0.1363	-0.1592		-0.0850	-0.0850	-0.0758	-0.0494
2014	0.3017	0.2419		0.1577	0.1577	0.1872	0.1333
2015	-0.0629	0.0115		-0.0031	-0.0031	-0.0227	-0.0682
2016	0.1834	-0.0224		0.0443	0.0443	0.0512	0.1625
2017	0.1966	0.0714		0.1224	0.1224	0.1211	0.1505

Annual Total Returns of S&P Public Utility Stocks
And Annual Income Returns of Bonds
for the Years 1928-2017

	Annual Total Returns	Income Returns					
			Public Utility Bonds				
Years	Public Utility Stocks	L-Term T-Bonds	AAA	AAA & AA	AA	A	BBB
1928	0.5431	0.0329	0.0451	0.0460	0.0470	0.0499	0.0541
1929	0.1376	0.0361	0.0468	0.0479	0.0490	0.0522	0.0578
1930	-0.2149	0.0332	0.0458	0.0470	0.0482	0.0514	0.0591
1931	-0.3193	0.0338	0.0434	0.0449	0.0463	0.0511	0.0635
1932	-0.0724	0.0350	0.0474	0.0504	0.0535	0.0640	0.0815
1933	-0.2170	0.0315	0.0436	0.0468	0.0499	0.0604	0.0833
1934	-0.1743	0.0306	0.0402	0.0436	0.0471	0.0559	0.0713
1935	0.6914	0.0278	0.0351	0.0376	0.0402	0.0466	0.0544
1936	0.2357	0.0273	0.0324	0.0343	0.0362	0.0415	0.0465
1937	-0.3337	0.0275	0.0320	0.0334	0.0347	0.0395	0.0486
1938	0.1020	0.0263	0.0303	0.0316	0.0329	0.0392	0.0510
1939	0.1538	0.0239	0.0286	0.0296	0.0305	0.0360	0.0448
1940	-0.1643	0.0224	0.0277	0.0285	0.0293	0.0331	0.0410
1941	-0.3050	0.0197	0.0269	0.0276	0.0283	0.0304	0.0366
1942	0.1079	0.0239	0.0272	0.0279	0.0287	0.0305	0.0358
1943	0.4750	0.0246	0.0264	0.0269	0.0273	0.0296	0.0338
1944	0.1879	0.0248	0.0265	0.0268	0.0272	0.0294	0.0333
1945	0.5665	0.0229	0.0256	0.0261	0.0266	0.0285	0.0318
1946	-0.0130	0.0208	0.0250	0.0254	0.0257	0.0268	0.0293
1947	-0.1236	0.0215	0.0257	0.0261	0.0264	0.0273	0.0297
1948	0.0451	0.0240	0.0282	0.0287	0.0292	0.0301	0.0327
1949	0.3074	0.0223	0.0270	0.0274	0.0277	0.0291	0.0324
1950	0.0152	0.0216	0.0262	0.0264	0.0267	0.0276	0.0312
1951	0.2075	0.0244	0.0285	0.0288	0.0291	0.0307	0.0334
1952	0.1947	0.0265	0.0300	0.0303	0.0305	0.0324	0.0351
1953	0.0918	0.0300	0.0325	0.0328	0.0331	0.0347	0.0371
1954	0.2269	0.0266	0.0296	0.0298	0.0301	0.0317	0.0348
1955	0.1357	0.0287	0.0307	0.0309	0.0311	0.0324	0.0341
1956	0.0416	0.0310	0.0335	0.0337	0.0340	0.0357	0.0374
1957	0.0541	0.0355	0.0397	0.0400	0.0403	0.0428	0.0452
1958	0.3827	0.0344	0.0384	0.0386	0.0389	0.0414	0.0447
1959	0.0958	0.0409	0.0445	0.0448	0.0451	0.0470	0.0494
1960	0.1680	0.0409	0.0450	0.0453	0.0455	0.0473	0.0489
1961	0.3646	0.0391	0.0442	0.0445	0.0449	0.0462	0.0476
1962	-0.0519	0.0401	0.0434	0.0437	0.0439	0.0450	0.0466
1963	0.1261	0.0403	0.0427	0.0429	0.0431	0.0437	0.0456
1964	0.1685	0.0419	0.0441	0.0442	0.0443	0.0450	0.0466
1965	0.0489	0.0424	0.0448	0.0450	0.0451	0.0458	0.0475
1966	-0.0504	0.0475	0.0513	0.0515	0.0518	0.0531	0.0552
1967	-0.0216	0.0494	0.0553	0.0556	0.0559	0.0576	0.0605
1968	0.1419	0.0543	0.0621	0.0627	0.0633	0.0651	0.0684
1969	-0.1769	0.0624	0.0706	0.0716	0.0725	0.0743	0.0778
1970	0.1494	0.0692	0.0822	0.0833	0.0844	0.0870	0.0913
1971	0.0050	0.0614	0.0766	0.0777	0.0789	0.0825	0.0868
1972	0.1464	0.0601	0.0744	0.0751	0.0758	0.0778	0.0815
1973	-0.2106	0.0701	0.0762	0.0767	0.0773	0.0789	0.0812
1974	-0.2135	0.0800	0.0849	0.0861	0.0873	0.0899	0.0929
1975	0.4364	0.0817	0.0894	0.0912	0.0929	0.0978	0.1057
1976	0.3245	0.0794	0.0864	0.0880	0.0895	0.0928	0.0987
1977	0.1076	0.0765	0.0814	0.0829	0.0845	0.0859	0.0896
1978	-0.0174	0.0840	0.0877	0.0888	0.0900	0.0917	0.0947
1979	0.1221	0.0921	0.0962	0.0978	0.0995	0.1017	0.1064
1980	0.1275	0.1115	0.1182	0.1211	0.1241	0.1271	0.1352
1981	0.1464	0.1349	0.1427	0.1458	0.1489	0.1529	0.1616
1982	0.2292	0.1309	0.1439	0.1448	0.1464	0.1532	0.1610
1983	0.2372	0.1115	0.1247	0.1229	0.1237	0.1298	0.1350
1984	0.2219	0.1247	0.1297	0.1339	0.1341	0.1374	0.1434
1985	0.3232	0.1104	0.1187	0.1179	0.1189	0.1228	0.1270
1986	0.3575	0.0802	0.0908	0.0930	0.0940	0.0973	0.1015
1987	-0.0544	0.0843	0.0934	0.0946	0.0953	0.0985	0.1027
1988	0.1849	0.0897	0.1013	0.1009	0.1014	0.1040	0.1083
1989	0.4351	0.0854	0.0938	0.0949	0.0955	0.0980	0.1001
1990	0.0069	0.0858	0.0943	0.0959	0.0964	0.0985	0.1009
1991	0.0931	0.0818	0.0891	0.0915	0.0921	0.0943	0.0961
1992	0.1183	0.0769	0.0822	0.0860	0.0869	0.0887	0.0897
1993	0.1661	0.0671	0.0737	0.0776	0.0780	0.0805	0.0816
1994	-0.0825	0.0730	0.0794	0.0799	0.0802	0.0826	0.0868
1995	0.3772	0.0708	0.0781	0.0774	0.0776	0.0813	0.0857
1996	0.0550	0.0672	0.0745	0.0742	0.0745	0.0762	0.0805
1997	0.1959	0.0670	0.0746	0.0743	0.0746	0.0747	0.0782
1998	0.1896	0.0572	0.0682	0.0674	0.0677	0.0687	0.0710
1999	-0.0998	0.0592	0.0710	0.0740	0.0748	0.0743	0.0766
2000	0.5475	0.0607	0.0790	0.0817	0.0821	0.0830	0.0839
2001	-0.2877	0.0557	0.0747	0.0777	0.0780	0.0787	0.0810
2002	-0.2934	0.0542		0.0730	0.0730	0.0754	0.0818
2003	0.2509	0.0496		0.0646	0.0646	0.0623	0.0673
2004	0.2763	0.0505		0.0608	0.0608	0.0617	0.0641
2005	0.2151	0.0465		0.0546	0.0546	0.0566	0.0592
2006	0.2323	0.0499		0.0583	0.0583	0.0607	0.0632
2007	0.1434	0.0493		0.0591	0.0591	0.0605	0.0629
2008	-0.3160	0.0448		0.0619	0.0619	0.0650	0.0711
2009	0.1801	0.0401		0.0579	0.0579	0.0610	0.0721
2010	0.0795	0.0405		0.0525	0.0525	0.0548	0.0598
2011	0.2051	0.0375		0.0489	0.0489	0.0514	0.0565
2012	0.1272	0.0256		0.0385	0.0385	0.0416	0.0490
2013	0.1363	0.0302		0.0417	0.0417	0.0441	0.0492
2014	0.3017	0.0316		0.0424	0.0424	0.0435	0.0485
2015	-0.0629	0.0254		0.0397	0.0397	0.0408	0.0496
2016	0.1834	0.0221		0.0373	0.0373	0.0394	0.0474
2017	0.1966	0.0267		0.0386	0.0386	0.0404	0.0443

Schedule 19

Palmetto Wastewater Reclamation, LLC (Consolidated)
Common Equity Cost Rate Summary

	Water Group Followed by Analysts		
	DCF(1)	CAPM(2)	RP(3)
Common Equity Cost Rate Range	10.50 %	10.80 %	11.10 %
Investment Risk Adjustments (4)	0.00	0.00	0.00
Palmetto Wastewater Reclamation, LLC (Consolidated) Adjusted Common Equity Cost Rate Range:	10.50	10.80	11.10
Palmetto Wastewater Reclamation, LLC (Consolidated) Recommended Common Equity Cost Rate (5)		10.75 %	
Check of Reasonableness of Common Equity Cost Rate (6)		10.5 % to 14.0 %	

Notes: (1) From Schedule 12 and explained in the Direct Testimony.
(2) From Schedule 17 and explained in the Direct Testimony.
(3) From Schedule 18 and explained in the Direct Testimony.
(4) As explained in the Direct Testimony.
(5) As explained in the Direct Testimony, the recommendation is only applicable to a rate making common equity ratio of 60%. (~59.7%)
(6) See page 2 of Schedule 14.